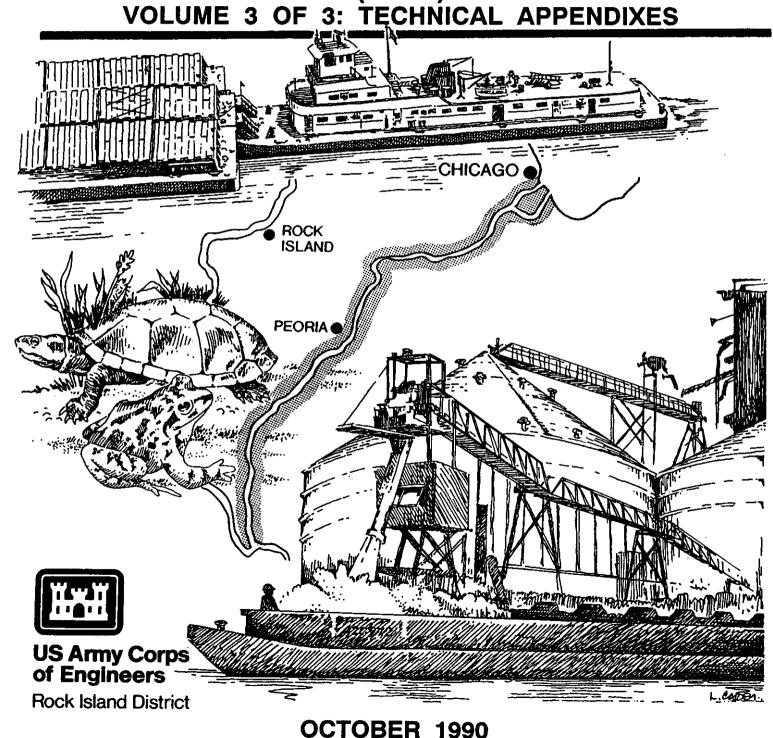
ILLINOIS WATERWAY NAVIGATION STUDY

RECONNAISSANCE REPORT (FINAL)





DEPARTMENT OF THE ARMY ROCK ISLAND DISTRICT, CORPS OF ENGINEERS CLOCK TOWER BUILDING—P.O. BOX 2004

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RECONNAISSANCE REPORT FOR ILLINOIS WATERWAY NAVIGATION STUDY

TECHNICAL APPENDIXES
VOLUME 3 of 3

APPENDIX E - CULTURAL RESOURCES

APPENDIX F - GEOTECHNICAL

APPENDIX G - PUBLIC INVOLVEMENT

APPENDIX H - PERTINENT CORRESPONDENCE

A
P
CULTURAL RESOURCES
N
D

E

RECONNAISSANCE REPORT FOR ILLINOIS WATERWAY NAVIGATION STUDY

APPENDIX E CULTURAL RESOURCES

TABLE OF CONTENTS .

The Illinois Waterway Archaeological Data Base

Structural Inventory at the Illinois Waterway Locks and Dams

Properties Listed on the National Register of Historic Places

Illinois State Historic Preservation Office Letter

DRAFT

THE ILLINOIS WATERWAY ARCHAEOLOGICAL DATA BASE

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Submitted to

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Table of Contents

	List of Tables	ii
	List of Figures	ii
	Management Summary	iii
	•	
	CHAPTER I. The Illinois Geographic Information System Archaeological Resource Data Base	. 1
	CHAPTER II. Development of the Illinois Waterway Archaeological Data Base	. 5
	CHAPTER III. Overview of the Archaeological Resources in Alton, LaGrange, and Peoria Pools	. 22
	Appendix A. List of Counties and U.S.G.S. Topographic Sheets Included in the Illinois Waterway Archaeological Data Base	A-1
	Appendix B. Key for Variables in Archaeological Site Location File and Site Location Data for the Alton, LaGrange, Peoria Pools, Starved Rock, Marseilles, Dresden, and O'Brien Pools	
•	Appendix C. Key for Variables in Archaeological Site Attri- bute File and Site Attribute Data for the Altor LaGrange, Peoria, Starved Rock, Marseilles, Dresden, and O'Brien Pools	1,
•	Appendix D. Bibliography of Archaeology Reports, Cross- Referenced by County	D-1
•	Appendix E. Structure of the Public Domain Land Purchase File	E-1

^{*} The Appendix is not for public review and is not included in this Reconnaissance Report

List of Tables

Table 3.1	physiographic type and time period. (Note: a site may have more than one cultural component present on its surface) (Asch 1978:26a)	27
Table 3.2	Cross-tabulation of cultural component by landform for sites in the Alton Pool	29
Table 3.3	Cross-tabulation of cultural component by landform for sites in the LaGrange Pool	31
Table 3.4	Cross-tabulation of cultural component by landorm for sites in the Peoria Pool	33
	List of Figures	
Figure 3.1	Previous archeological investigations within the lower Illinois River valley	25

MANAGEMENT SUMMARY

Since the mid-19th century, scientists and laymen alike have explored archaeological sites in the Illinois River Basin. These investigations document the development of human culture. They also provide information on climate change, landscape evolution, floral and faunal ecology, and the history of the Illinois River.

Although thousands of sites have been documented in bluff and upland settings along the Illinois River and its tributaries, only 669 sites are recorded in the Illinois Archaeological Survey Master Site File for the floodplain of the Illinois River. However, only a small proportion of the floodplain has been systematically surveyed. Also, most of the floodplain surveys have been done without the benefit of associated geological studies. It is apparent, given the dynamic history of the Illinois River, that a large part of the prehistoric landscape is buried in alluvium. Thus, the existing surface is not a suitable analog for estimating site density and distribution, a fact which underscores the need for geoarchaeological studies.

Much, if not most, of what is known about archaeological resources in the Illinois River floodplain is attributable to work sponsored by the U.S. Army Corps of Engineers. These projects have focused most closely on the river shoreline and near shoreline settings like Levee and Drainage Districts.

Investigations in the Alton Pool, in particular, provide the

clearest understanding about the distribution and antiquity of sites along the river shoreline (see Farnsworth 1976). Over 300 sites are documented for the Illinois River floodplain in the lower 80 miles of its course. Of these, 75 are within 300 feet of the shoreline. The oldest shoreline sites date to approximately 4,000 B.C.

Geological and archaeological studies conducted for Levee and Drainage Districts (for example, Hassen and Batura 1983 and Hajic 1987) provide information essential to an understanding of the geologic history of the Illinois River and the potential for buried archaeological sites. This work is crucial to estimating the potential of archaeological resources in shoreline and floodplain contexts.

Prolonged periods of low pool elevation provided an unprecedented opportunity to examine the shoreline in the LaGrange and Peoria Pools. Esarey et al. (1988, 1990) documented over 200 sites, which account for 80% of the sites recorded for the Illinois floodplain in this section of the river valley. The distribution, density, and antiquity of sites in the LaGrange Pool is comparable to that of the Alton Pool. However, the lack of geological and shallow sub-surface geomorphology studies seriously limits an understanding of the geoenvironmental context of these sites. Moreover, without this information it is difficult to develop sound predictions on the potential for sites in the floodplain.

Surveys of the Peoria Pool shoreline were not as productive.

A review of Woermann's maps of the Illinois River and Lake Peoria indicate that the early historic, and presumably sections of the

prehistoric shoreline, are inundated.

The Illinois Waterway Archaeological Data Base (IWADB) provides for the first time a comprehensive compilation of information about archaeological resources in the Illinois River floodplain. Information from the Illinois Archaeological Survey Master Site File was converted into a Geographic Information System (GIS) format. GIS incorporates data base management and graphic software ideally suited for mapping and linking a variety of information to particular map characteristics. The IWADB consists of several data files including: 1) a Tabular Site Location File, 2) a Tabular Site Attribute File, 3) a Graphic Site Location File, and 4) a Graphic Surveyed Areas File. In addition, it includes a bibliography of archaeological reports (Bennett 1984) and a Tabular Public Domain Land Purchase File (Illinois State Archives 1984).

With a GIS-based IWADB, U.S. Army Corps of Engineers archaeologists and planners can evaluate the potential impact of development on these resources. The addition of information from future geological, archaeological, and environmental studies to the IWADB will provide a more powerful means characterizing known resources in an area and estimating the archaeological site potential of others. Used in this way the IWADB becomes a tool for prudent management of these unrenewable resources.

CHAPTER I

The Illinois Geographic Information System

Archaeological Resource Data Base

Introduction

In 1956 Illinois archaeologists formed the Illinois Archaeological Survey. Central among the Survey's constitutional mandates is the development and maintenance of a master file of archaeological sites in the state. Today the file contains information on over 28,000 sites.

In 1983 the Illinois Department of Mines and Minerals (IDMM) implemented the Office of Surface Mining Lands Unsuitable for Mining Program (LUMP). LUMP establishes a petition process by which private citizens may request IDMM to determine the suitability of mining a particular property. IDMM contracted the Illinois Department of Energy and Natural Resources (IDENR) to create a data base of information to evaluate the potential impact of mining in coal-bearing areas of the state, and assist the public in preparing petitions.

Five IDENR Divisions, the State's Geological, Natural History, and Water Surveys, the Illinois State Museum, and the

Office of Research and Planning, submitted a proposal to IDMM to develop a computer-based LUMP information system. IDENR proposed a state-of-the-art Geographic Information System (GIS). GIS is a powerful means of acquiring, storing, manipulating, and presenting graphic and content information which has a geographic or spatial component. After reviewing several proposals, IDENR chose the GIS system developed by Environmental Systems Research Institute (ESRI).

ESRI's GIS incorporates data base management and graphics software ideally suited for mapping and linking a variety of information to particular map characteristics. It is a hybrid of two software packages: ARC, a proprietary software of ESRI, and INFO, developed and marketed by Henco. ARC enables the GIS to process graphic information. Graphic data are input by digitizing, a process that transforms cartographic data in the form of points, lines, and polygons, into digital images. INFO, a data base management software, enables the GIS to store, retrieve, and manipulate data about digital images as well as establish independent data files. Together these programs provide a powerful means of managing information. The IDENR GIS is now known as the Illinois Geographic Information System (IGIS).

The Illinois State Museum is responsible for the development and maintenance of a cultural resource file for LUMP. Since 1984, Museum staff have converted information from the IAS files into a GIS format. Several files are now on line. They include information on site locations, cultural and physiographic

attributes of sites, and a limited coverage of surveyed areas. Through LUMP, Museum staff also compiled a bibliography of research reports (Bennett 1984). Originally produced in a word processing format, the bibliography has been converted to a more powerful cross-referenced information source. Integration of bibliography information into a GIS format is planned.

These files facilitate both cultural resource management and archaeological research missions. Thus, copies of the files are now accessible to the Illinois Historic Preservation Agency (IHPA), the IAS, and several archaeological programs in Illinois. The request from the U.S. Army Corps of Engineers, Rock Island District is in keeping with the need to prudently manage cultural resources in the Illinois River basin.

The Illinois River has a rich record of human history spanning over 10,000 years, and has long been a focus of archaeological research. Since the late 19th century, scientists and laymen alike have explored Native American, French Colonial, and now, early American Sites. The IAS files include information on 669 sites in the Illinois River valley, including island, floodplain, terrace, and bluffbase settings (see Appendix D).

The Illinois Waterway Archaeological Data Base (IWADB) is a compilation of our current knowledge of archaeological sites in the Illinois River valley. In addition, it includes a compilation of the Land Purchase record compiled by the Illinois State Archives. The remainder of this report discusses the following topics:

GIS-based archaeology files;

- 2) data base compilation;
- 3) data base limitations;
- 4) an overview of our current understanding of the archaeological record in the Alton, LaGrange, and Peoria pools; and
- 5) recommendations for file updates and refinements. A Management Summary concludes the report.

CHAPTER II

Development of the

Illinois Waterway Archaeological Data Base

Introduction

The Illinois Waterway Archaeological Data Base (IWADB) is a subset of the IGIS Archaeological Resources Data Base. Its organization and information content is identical. The IWADB was created by transferring information on archaeological sites from the Illinois Archaeological Survey (IAS) Master Site File into GIS computer files.

Illinois Archaeological Survey Site File

The IAS site file consists of site record forms, that include sketch maps of site location. This information is forwarded to the IAS by archaeologists throughout the state.

Information quality is evaluated by IAS staff who review all forms and maps, checking to make sure legal descriptions and UTM coordinates match site locations. U.S.G.S. topographic sheets, originally 15 minute series, but now exclusively 7.5 minute series sheets, serve as base maps for master site location maps. IAS

staff transfer site location information from forms and sketch maps to the master sheets. Initially, site locations were recorded as points. More recently, however, they are recorded as polygons to illustrate the geographic extent of the site.

Duplicate copies of the full set of site record forms are also housed by Southern Illinois University, Carbondale; the Illinois State Museum; and in the near future, the Illinois Historic Preservation Agency. A number of universities and archaeological organizations have subsets of the file.

IWADB Architecture

The number of sites in the IAS site file most strongly influenced the architecture of the GIS archaeology data base. In addition, in the context of the LUMP program, it was imperative to have a comprehensive listing of sites in coal-bearing areas available as quickly as possible. The archaeological data base consists of several components, here listed in order of development. They include:

- 1) a Tabular Site Location File;
- 2) a Digitized Site Location Map File:
- 3) a Site Attribute File; and
- 4) a Digitized Surveyed Areas Map File.

Currently under development are files on cemeteries, and the locations of National Register and Illinois Register sites.

In addition, a bibliography of reports, articles, monographs, and books on Illinois archaeology (Bennett 1984) was compiled for LUMP. Although not currently organized in a GIS format, plans to do so are being developed. A GIS-based listing of land purchases compiled from the Illinois State Archives is also included.

Information in the GIS site location and attribute files are linked by index numbers. Unique numbers are assigned to each site keyed on the FIPS county code and IAS site number. Thus information about a site, regardless of format, may be cross-referenced.

File Organization

The architecture of the IWADB mirrors the LUMP data base. To build the IWADB, subsets of information were extracted from each LUMP file. A description of the organization of each file, how it was compiled, and its limitations are presented below.

Site Location File (Tabular)

Completed IAS site record forms (see Figure 2) contain information on site location. Museum staff transferred information from site record forms to standard 80-column computer data sheets. Using a commercial PC-based data base software, DBase II and DBase III+ (Ashton-Tate Inc. 1985), site location information was transferred to computer files. The D-Base files were then

transferred to the GIS data base management software, INFO, resident on PRIME computers, which serve as the CPU host of the IGIS. The <u>Site Location File</u> includes the following information:

Variable

County

Site Type Code

Illinois State Museum Site Number

Illinois Archaeological Survey Site Number

Site Name

Legal Descriptions in Quarter Section

Alignment

U.S.G.S. Topographic Sheet Reference

Topographic Sheet Scale

Easting U.T.M. Coordinate

Northing U.T.M. Coordinate

County FIPS Number

Site Index Number

Site Attribute File (Tabular)

This file contains administrative, environmental, and cultural information about each site in the data base. This information was

obtained from the IAS site record form. The contents of this file are listed below:

Variable

County

IAS Site Number

Cultural Affiliation 1

Site Extent

Physiographic Setting

Drainage

Field Conditions at Time of Survey

Multiple Visits?

Pottery Present

Projectile Point Present

Surveyor

Date of Form

Collection - Institution Where Artifacts are Curated

Index number

Codes for this variable and those that follow are presented in Appendix B.

Digitized Site Location File (Graphic)

This file is a graphic version of site location. The graphic file was created by digitizing the location of sites plotted on the IAS master maps (Figure 3). Digitizing converts the map features into digital images. Traditionally, site locations were noted as

points. Today, where possible, polygons are used to illustrate the spatial extent of a site. The digitized data are in the form of an ARC/INFO point coverage recorded in the Lambert Coordinate system. IWADB maps are plotted at 1:24,000 scale. They include site locations annotated with IAS numbers; surveyed areas, demarcated with thick black lines; sections lines; the name of the U.S.G.S. 7.5 minute topographic sheet; and a border signifying the extent of the topographic sheet coverage.

Surveyed Areas Map (Graphic)

The State Historic Preservation Office (originally located in the Historic Sites Division of the Illinois Department of Conservation, now the Illinois Historic Preservation Agency) maintains records on the location of archaeological site surveys. This information is recorded on U.S.G.S. topographic sheets. The map information reflects reconnaissance projects conducted during the last 15 years, and thus cannot be considered comprehensive. Beginning about 15 years ago, more rigorous reconnaissance standards were implemented. Thus, the surveyed areas coverage shows areas of rigorous, systematic survey. Museum staff digitized IHPA maps to create this coverage.

Quality Assurance, Quality Control

Quality Assurance

The Illinois State Museum is not responsible for the quality of information recorded in the IAS site file and the IHPA surveyed The GIS data base is a duplicate of the IAS file. Museum staff have simply transferred information from site record forms and maps to computer files. One exception concerns information in the site attribute file. Descriptive terms for landform setting are particularly diverse and often inconsistent. We developed a simplified classification system consisting of general landform terms. A similar system was developed to record field conditions at the time of survey. These data manipulations are the only deviations from information found on IAS site record Questions about specific site information should be directed to the individual who recorded it (see the Site Attribute File for this information).

Quality Control

Museum staff have implemented a series of data checks to insure the accuracy of the data transfer process. Tabular data files are compared with original site record forms. When errors have been discovered, museum staff consult with IAS staff to

determine, if possible, the source of the error. In some instances, the error can be attributed to the data translation process, in others, the original data are incorrect. The data quality control process is ongoing. File users are urged to note errors and forward them to the museum for correction.

Graphic file coverages are evaluated by comparing site maps with expected legal location. Particularly noteworthy are errors caused by the transfer of information from 15 minute to 7.5 minute maps. Minor mislocations are magnified by the difference in map scale. Review of the map file is also ongoing.

Limitations

Unregistered Information

By far the most serious limitation of the IAS files is the amount of unrecorded information. Of particular concern for the current project is the amount of information from the lower Illinois River valley (primarily the Alton Pool) which has yet to be forwarded to the IAS. It is estimated that about 100 site locations are unregistered. The level of information from other pools is unknown. Once this information becomes available, a revised file will be forwarded to the Rock Island Corps.

Historical Archaeological Sites

Only recently have Illinois archaeologists systematically recorded historical archaeological sites. A truly comprehensive record of historical sites will require 1) field work and 2) research of plat maps, county histories, and atlases. Plat map information can be digitized to provide locations for potential historical archaeological sites and architectural sites. Development of such a data base is in the conceptual stage. Pilot studies have been conducted to evaluate feasibility.

Verification

A noteworthy portion of sites in the Illinois River valley were recorded more than a decade ago. In some areas development may have impacted these sites. GIS coverages of infrastructure, mined-out areas, metropolitan areas, and other maps of modern development can provide a means of evaluating the current status of sites in developing areas. Ultimately, however, field verification is necessary to evaluate site status.

Bibliography and Land Purchase Data

Bibliography (Bennett 1984)

This bibliography consists of papers, articles, and monographs on Illinois archaeology through 1982. It is not presently integrated with the GIS archaeological resources files. Originally organized as a simple word processing file, the bibliography has been transferred to a proprietary software of the Museum. Through this software, known as alexis (Aeria 1989), the bibliography is cross-referenced by county, but efforts are underway to expand the cross-reference codes to include more detailed information such as drainage basin, cultural affiliation, and the subject of the report. If a research report refers to a site or sites, this information is also being encoded. In the future this information will be linked to the GIS format.

Compilation of IWADB bibliography was a two-step process. First references were compiled for all counties intersected by the river. This was done with the Alexis-based files. At the current time there is no means of separating Illinois River valley references. As a result, there is duplication in references on a county by county basis, particularly where projects encompassed several counties. Next, the IHPA surveyed areas map was examined. Each surveyed area is denoted with a record number which refers to a specific project. Project files were examined to accumulate a

list of report titles. Much of the work done in the Illinois River valley since 1982 is unpublished. The results of most reconnaissance projects are recorded on standard IHPA archaeological short report forms (ASSR). Reference to these projects is included in the bibliography on a county by county basis. As is the case with all of the files, the bibliography file will be updated.

Land Purchase File - Erich Schroeder

In 1975 the Illinois State Archives began a long-term project to computerize the Illinois land records (Kremm 1975). The project was finished in 1984, resulting in a file of more than 500,000 records of land entries (Illinois State Archives 1984). Each record consists of:

Variable

The Date of the Transaction

Name of the Purchaser

Number of Acres

Price Per Acre

Total Price

Legal Description of the Land Parcel (principle meridian,

township, range, section, and fractional description)

County or State of Purchaser (if available)

Type of Transaction

In general, the pattern of land entries reflects the spatial patterns of frontier development and settlement. Sometimes the reflection is direct, for example the procurement of adjacent land parcels by members of an extended family of settlers (Schroeder 1988; Faragher 1986). Sometimes the reflection is less direct, for example land grants to veterans or companies, or purchases by speculators (Rezab 1980; Conzen 1988; Stover 1975). Also, the patterns of land entries can reflect the changing legal and economic environment (Hart 1974:77-61; Schroeder 1989). However, there can also be cases in which the land records do not reflect the frontier settlement patterns; for example, it is not possible to identify "squatters" by using this data set (Wagner 1989).

To summarize briefly, before the 1840s the land entries follow environmental factors, particularly the prairie-timber boundary and small river drainages. In the floodplain of the Illinois River, the earliest land entries are usually at the base of the bluffs, often well away from the river. There is also a trend towards purchases in the vicinity of communities, reflecting the higher perceived value of the lands in that situation.

Description of the data set

This data set was produced by using the GIS to clip out all the sections that are shown on any of the USGS 7.5 minute quadrangle maps that border the Illinois River. The legal locations of these sections were then used to make a subset of the

INFO file that contains the land records. In cases where a section is only partially located on one of the USGS maps, all of the parcels in that section are included in the file.

Limitations

There are some limitations of this data set. The most important is that it does not represent the final version produced by the Illinois State Archives. The tape received by the Illinois State Museum is an interim version, and is therefore missing several data sets. In particular there are no records of the 1818-1819 land grants to veterans in the Military tract. This means that there is a great deal of missing data on the west side of the Illinois River in the counties from Calhoun, in the south, to Marshall, in the north. We are currently working with the Archives to incorporate this information.

Another group of land transactions that is missing from this file are those resulting from the Swamp Land Act of 1850. This act donated swamps or inundated lands to the counties for the purpose of draining or reclaiming. Records for these transactions are stored at the respective county courthouses, and the information from most of the counties is not included in the Archive's file (Gaynon 1975; Schroeder 1989).

File Use

The GIS format enables one to search the archaeological site data files, list and cross-tabulate site characteristics, and illustrate site location and distribution based on specified parameters. A typical application may involve determining if any known sites are located in a specified area. A search of the Site Location File using INFO commands will provide a listing of sites in the area in question. Using the index number to cross-tabulate, one can access the Site Attribute File to obtain more detailed information on the antiquity, extent, and physiographic setting of the site or to obtain administrative information about who conducted the work and where artifacts and records are curated. Using ARC commands, a map of the site and its relationship to other sites may be generated. As other graphic coverages -- such as water bodies, distribution of pre-settlement vegetation, geoenvironmental context -- are added to the system, one can use INFO to gather more detailed information on site setting. the IWADB is a foundation of information on which one can build a more detailed and sophisticated data base.

Summary

The IWADB is a compilation of information from the IAS site files, published and unpublished reports on archaeological

research, and Land Purchase records. It contains a variety of information on the site locations and their physiographic setting. Also included is administrative information identifying the source of data and the location of artifact and record curation. The bibliography of reports, articles, and books is organized by county. The Land Purchase data were obtained for U.S.G.S. topographic sheets which map the course of the Illinois River.

These data were compiled in a Geographic Information System format which includes tabular and graphic components. The IWADB consists of several files including:

- 1) a Tabular Site Location File;
- 2) a Digitized Site Location Map File;
- 3) a <u>Site Attribute File;</u>
- 4) a Digitized Surveyed Areas Map File; and
- 5) a Tabular Public Domain Land Purchases.

All of the archaeological site files are cross-referenced by an index number. Thus, one can search the <u>Site Location File</u> using specified parameters. If sites are identified, the <u>Site Attribute</u> and <u>Site Location Maps</u> may be consulted. The bibliography and Land Purchase records are currently independent of the GIS format. These files can be used to develop preliminary interpretations of the character and distribution of archaeological resources in the Illinois River valley.

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CHAPTER III

Overview of the Archaeological Resources in the

Alton, LaGrange, and Peoria Pools

Introduction

The Illinois Waterway stretches from the mouth of the Illinois River near Grafton to Lake Michigan 326 miles away. It includes the Illinois and Des Plaines Rivers, and the Chicago Sanitary Canal. The lower 231 miles of the waterway is divided into the Alton (the confluence of the Illinois and Mississippi River to River Mile [RM] 80) LaGrange (RM 80 to 156), and Peoria pools (RM 156 to 231), each of which is formed by a lock and dam.

There is a rich history of archaeological research in this segment of this valley. Data from the Illinois River valley provided earlier perspectives mound construction (Henderson 1884; Snyder 1893, 1909). Field schools conducted by the University of Chicago in the 1920's and 1930's revolutionized training in archaeology and standardized methods of archaeological exploration (Cole and Deuel 1937). The human remains from the prehistoric cemetery at Dickson Mounds, have been the subject of numerous studies about human health and disease (Buikstra and Milner 1989). More recently, large-scale interdisciplinary projects like the

Koster Site excavations serve as models of modern archaeological research (Brown and Struever 1973).

The legacy of archaeological investigations notwithstanding, except for research conducted in the Alton Pool, relatively little is known about archaeological resources in the Illinois River floodplain. The Illinois Archaeological Survey (IAS) files contain information on 542 prehistoric and historic sites in these pools, more than half of which are located in the Alton Pool.

Prior to projects sponsored by the U.S. Army Corps of Engineers (St. Louis and Rock Island Districts) conducted in the mid-1970's and early 1980's few sections of the valley had been systematically surveyed for archaeological sites.

A noteworthy exception is the Historic Sites Survey (HSS) program sponsored by the U.S. Department of Interior through a grant to the Illinois Department of Conservation, Historic Sites Division. Several sections of the Alton, LaGrange, and Peoria pools were the subject of HSS surveys. A cursory examination of HSS site data suggests survey coverage was not systematic, few large tracts of contiguous land were examined. Instead, it appears that surveyors often relied on farmer and collector interviews to locate sites. Large, well-known sites were documented, few of which are situated near the river.

The U.S. Army Corps sponsored projects provided the first opportunity to systematically examine tracts of land in the river valley. These studies included shoreline surveys (Farnsworth

1976), archaeological surveys (Hassen and Batura 1983; Hassen 1985) and geological investigations (Hajic 1987) of drainage and levee settings, and inspection of release areas for the disposal of dredge spoil (Hall 1974).

The remainder of the sites recorded in the IAS file were reported by landowners or artifact collectors to archaeologists, who submitted the information to the IAS. Following is a brief overview of available information on the archaeological resources of these three pools.

Alton Pool

This section of the Illinois Waterway has been the subject of the most detailed archaeological investigation. The IAS file records 303 sites in the Alton Pool.

Although extensive sections of the river valley were surveyed, they represent only a small proportion of floodplain (Figure 1). For a review of the results of archaeological site reconnaissance prior to 1978 see Asch et al. 1978. Unfortunately, neither the spatial extent of the floodplain nor areas surveyed has been quantified (Note: the HPA surveyed areas maps do not illustrate the extent of most of the surveys listed by Asch et al. [1978]).

In 1976 the U.S. Army Corps of Engineers, St. Louis District, sponsored a survey of a 300-foot-wide corridor along the shoreline of the Alton Pool (Farnsworth 1976). Sixty-two 62 prehistoric and 13 historic sites were documented. Sites are not evenly

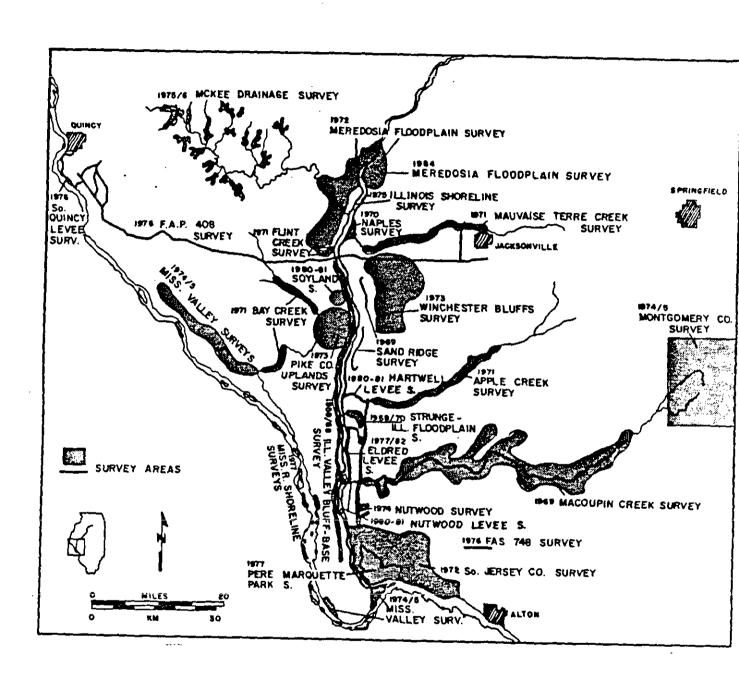


Figure 3.1 Previous archaeological investigations within the lower Illinois River valley (after Asch et al. 1978:5a; updated by Hassen 1984).

distributed along the shoreline, but there is not apparent pattern to the distribution.

A cross-tabulation of cultural components by physiographic setting for Alton Pool sites found prior to 1978 is presented in Table 3.1 (Asch et al. 1978:26a; [Note: not all of the sites documented in this table have been registered with the IAS]). Thirteen percent (n=42/333) of the sites are found in shoreline settings (n=21 on sand banks, n=19 on natural levees, n=2 on island shorelines). Shoreline altitude in the pool is approximately 425 feet above mean sea level (AMSL). Seventy-five percent (n=247/333) of the sites are found on landforms above an average of 430 feet AMSL.

Farnsworth (1976:6) notes that Late Archaic sites are the oldest exposed in shoreline contexts. Reexamination of several hafted bifaces with the benefit of additional information on Archaic Period artifact typology, indicates some of these specimens may be attributed to Middle Archaic culture.

Beginning in 1980, the U.S. Army Corps of Engineers, St. Louis District sponsored a series of archaeological and shallow geomorphological and geological investigations of selected Levee and Drainage Districts in the Alton Pool (Hassen and Batura 1983; Hassen 1985). Linear transects along ditches and levees were systematically examined resulting in the documentation of numerous sites.

Hajic (1987) summarizes the results of the geological studies.

Based on surficial geomorphology and extensive coring of valley

<u>Cultural</u> <u>Components</u>	Bluffbase	Bluffbase Dunes	Colluvial	High Terrace and/or Dunes	Sand Ridge (Keach School Terrace)	Keach School Terrace Flats	DeerPlain Terrace Edge (not on river)	DeerPlain Terrace/ River Shoreline	Tributary Creek Banks	Alluvial Plats/ Back Swamp	Old River Channel	River Shoreline (natural levee)	River Shoreline (Band banks)	Islands	Totals
Paleo Indian	٥	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Early Archaic	3	0	1	0	2	0	0	0	0	0	2	0	1	0	9
Middle Archaic	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2
Helton	18	3	2	. 4	23	1	0	1	3	0	3	0	0	0	58
Titterington	13	0	1	1	11	0	0	0	1	0	0	0	0	٥	27
Terminal Archaic	4	2	1	0	-6	0	0	0	Ż	0	1	1	2	0	19
Archaic	0	0	o	0	1	0	0	0	0	0	0	o	1	Q	2
Early Woodland	19	2	1	4	36	0	1	2	8	0	7	8	3	0	91
Early/Middle Woodland	1	0	0	0	1	0	1	0	0	Q	1	Q	a	a	4
Middle Woodland	46	4	3	10	14	0	0	4	11	0	5	13	8	0	118
Early Late Woodland	17	1	2	0	8	0	0	1	6	a	2	6	3	1	47
Late Late Woodland	18	1	2	3	3	0	0	0	3	0	2	3	1	0	36
Late Woodland	18	3	7	11	18	0	1	1	3	ا ه	1	4	3	0	90
Mississippian,	27	0	3	3	.9	.0	0	1	2	0	1	1	1	0	48
Historic Indian	o	0	0	1	0	0	0	1	0	0	0	0	a	a	2
Ceramic	2	0	0	0	3	0	1	0	3	0	0	0	1	0	10
No Diagnostics	23	1	4	4	12	1	1	1	6,	1	3	3	5	1	66
Number of Sites Represented:	113	8	18	27	74	2	5	5	25	1	13	19	21	2	333

Table 3.1 Distribution of sites in the Illinois Valley by physiographic type and time period. (Note: a site may have more than one cultural component present on its surface) (Asch 1978:26a).

deposits, he developed a model of valley geomorphic history, which provide a geoenvironmental context for archaeological sites. This model was then used to assess buried site potential. Hajic concludes that depositional contexts for buried sites are abundant but vary spatially and through time.

Numerous buried prehistoric sites have been documented in the Illinois River floodplain included in the Alton Pool. These sites range in age from perhaps as old as 9000 B.P. to 1200 B.P. Sites located near the Illinois River include the Early Archaic Twin Ditch site (Hassen and Hajic 1984; Morrow 1987) and Middle Archaic components at Napoleon Hollow (Wiant 1980; Wiant et al. 1983; Wiant and McGimsey 1986) and Quasar (Hassen et al. 1985b).

Cultural components are distributed among all landform classes (Table 3.2). The lack of detailed landscape classification seriously limits the utility of these data. Moreover, it underscores the need to integrate the archaeological and geological data (see Hajic 1987:4).

Sites representing every prehistoric period every prehistoric period in the floodplain of the Alton Pool (Table 3.2). The diversity of cultural components is a reflection of the stability of some sections of the floodplain. The detailed classification of cultural components is a result of the extraordinary amount of archaeological research on the prehistoric chronology of the region.

The potential impact of changes in pool character on archaeological resources is given perspective by Warren (1987). He

Table 3.2. Cross-tabulation of cultural component by landform for sites in the Alton Pool.

_	Island	Floodplain	Terrace	Bluffbase	Unknown	Total
PALARCMW !	0	0	0	1	0	1
ARC	ō	7	ŏ	· ī	ŏ	8
ARCEARMA	0	0	Ō	ī	o i	ī
ARCWOD	0	0	0	2	0 }	2
ARCWODHE	0	4	0	0	0 (4
ARCMWD	0	2	0	0	0	2
ARCLWD	0	4	0	0	0	4
EARARC	0	1	0	0	0 ¦	1
EARMARLA	0	1	0	0	0 ¦	1
EARMAREW	o	1	0	0	0 {	1
EARMARLW	Ō	1	O	0	0	1
EARWOD	1	0	0	0	0	1
MARLAREW	0	1	0	0	0	1
MARWOD	0	2	0	0	0	2
MAREWDLW	0	1	0	Ō	0	1
MARMWD	0	1	0	0	0	1
LAR	0	1	1	0	0	2
LAREWD	0	1	0	. 0	0	1
LAREWDMW	0	2	0	0	0	2
LAREWDMW	0	2	0	2	0	4
WOD	0	9	1	5	0	15
WODMWD	0	2	0	0	0	2
WODLWDHE	0	1	0	0	0	1
WODHEA :	0	3	0	1	0	4
EWDMWD !	1	9	0	0	0	10
EWDMWDLW	0	3	0	0	2 0	5
EWDLWD !	0	9 1	0	0	0 :	9
EWDLWDHE !	Ö	1	0	0	0 1	1
EWDHEAMW !	Ö	i	0	Ö	ő	1 1
MWD	1	19	Ö	5	0 1	25
MWDLWD	ō	6	Ö	1	ŏ	25 7
MWDLWDHE	ŏ	ĭ	Ö	Ô	i !	2
MWDHEA	ŏ	ī	Ö	Ö	ō	1
LWD	2	4	ŏ	ŏ	ŏ i	6
LWDWOD	ō	i	Ö	ŏ	ŏ	ĭ
LWDHEA	ō	2	ŏ	ŏ	ŏ	2
LWDMIS	Ŏ	ī	Ö	ŏ	ŏ	ī
MIS	Ŏ	ī	Õ	3	ŏ	4
MISHEA	ō	ī	Ŏ	Ö	ō ì	i
HEA	Ö	51	4	11	ĭ	67
xxx	1	65	16	13	ī	96
TOTAL	6	224	22	46	5	303

monitored bank erosion at six archaeological sites in the Alton Pool. Rates of erosion varied among sites and through time. Even moderate rates of erosion had a severe impact on sites. As sites eroded a lag deposit of artifacts formed on the shoreline. Warren attributes erosion to wave action and prolonged periods of high pool elevation. Shoreline erosion has likely affected the sites reported by Farnsworth in 1976.

LaGrange Pool

Although there is also a rich history of archaeological investigations in this section of the Illinois River, the floodplain has rarely been investigated. There are two noteworthy exception. The University of Chicago conducted extensive excavations at Liverpool (Cole and Deuel 1937). Sponsored by the U.S. Army Corps of Engineers, Hall (1974) examined over 60 dredge spoil releases in the LaGrange Pool, but documented only two prehistoric sites.

The Illinois Archaeological Site files list 181 sites for the LaGrange Pool (Table 3.3). Severty-five percent of these sites were documented during recent shoreline surveys (Esarey 1988, 1990). Analysis of this information was supported by the U.S. Army Corps of Engineers, Rock Island District.

The distribution of cultural components by landform (Table

Table 3.3. Cross-tabulation of cultural components by landform for sites in the LaGrange Pool.

~=	Island	Floodplain	Terrace	Bluffbase	Unknown	Total
ARC	0	6	1	0	0	7
ARCEWD	ō	ĭ	ō	. Ŏ	ŏ	í
ARCEWDLW	ã	ĩ	Ö	Ö	ŏ	ī
ARCEWDMI	Ō	ĩ	ŏ	ō	ŏ	ī
ARCMWDMI	ō	ī	ŏ	ŏ	ŏ	ī
ARCLWD	Ö	ī	ō	ŏ	ŏ	ĩ
EARMIS	0	Ö	ŏ	i	ŏ i	ī
MARWOD	Ó	i	Õ	ō	ŏ !	ī
LAREWD	Ö	3	ò	ŏ	οl	3
LAREWDMW	Ö	ì	ō	ŏ	ŏ	ĭ
WOD (Q	15	1	ì	Ŏ	17
WODLWD	0	1	ō	ō	ŏ !	1
WODMIS	0	3	Ō	Õ	ŏ	3
WODHEA	Ö	ì	ō	ŏ	ŏ Ì	ĭ
EWD	1	9	Ö	Õ	ŏ	10
EWDWOD	0	1	Ō	Ö	a i	1
EWDMWDLW	1	4	0	Ö	o i	5
EWDLWD	ō	5	ō	ŏ	ō	5
EWDLWDMI	4	3	Ō	Ö	o i	7
EMWMWDLW	0	1	Ō	Ō	ō	1
EWDMIS	0	3	Ö	Ō	o i	3
RMD	0	11	3	2	o i	16
MWD?	0	0	1	Ö	o i	1
MWDLWD	0	3	0	0	o !	3
MWDLWDMI	0	4	Ö	Ō	o i	4
MWDMISHE	0	1	Ò	Ō	o i	1
MWDHEA	0	1	0	0	o i	1
LWD	2	21	2	1	ō i	26
LWDMIS	1	8	ō	õ	ŏ	9
LWDHEA	Ō	2	ō	Ŏ	ŏ i	2
MIS	1	6	Ö	ō	ŏ i	7
MIS?	Ö	Ö	ō	ŏ	ŏ	1
HEA	1	3	ŏ	Ö	ŏ!	4
xxx	Õ	29	· 3	ŏ	2	34.
TOTAL	11	151	11	5	2	181

3.3) is comparable to the Alton Pool. However, Esarey (personal communication 17 June 1990) notes differences in the frequency of Missiissippian sites when data from the two pools are compared. There are few Mississippian sites in the Alton Pool in contrast with the LaGrange Pool. Whether this difference is due to 1) survey methods or 2) water level at the time of survey is unknown (Note: Esarey's surveys were conducted during periods of unusually low pool elevations that persisted for extended periods of time).

Middle Archaic (side-notched dart points) sites are the oldest sites exposed in the shoreline of the LaGrange Pool (Esarey 1990). The potential for buried Archaic Period sites within 300 feet of the shoreline was documented by McGimsey et al. (1985) during investigations at Liverpool.

Peoria Pool

There has been relatively little archaeological investigation of the Peoria Pool. Prior to Esarey's (1990) shoreline survey, in which 52 sites and isolated finds were documented, only 58 sites were recorded (see Appendix D; Table 3.4). Hall (1974) examined 40 dredge spoil releases but found only four sites. The other sites in the Peoria Pool are attributable to HSS surveys (Jelks 1971; Wiant 1974; Wiant et al. 1975) and miscellaneous contributions.

Little is understood about the antiquity of most sites in this pool (Table 3.4). Most sites post-date the Archaic period, a pattern noted for the LaGrange Pool. However, almost 50% are

Table 3.4. Cross-tabulation of cultural components by landform for sites in the Peoria Pool.

	Island	Floodplain	Terrace	Bluffbase	Unknown	Total
ARC	0	0	0	2	0 !	2
ARCWODMI	0	0	1	Ō	o i	ī
ARCMIS	0	0	1	Ö	Ō	ī
WOD	0	1	2	Ö	i	4
WODARC?	0	1	0	0	o i	1
EWD	0	1	0	0	o i	ī
MWD	0	.3	2	1	1	7
LWD	0	0	0	1	o i	1
WOD?	0	0	0	1	o i	ī
MIS	2	0	0	ì	o i	3
MISWOD	0	1	0	0	0	ī
HNA	0	1	0	0	o i	ī
HEA	0	1	2	1	2	6
xxx	0	16	6	4	2	28
TOTAL	2	25	14	11	6	58

classified as cultural component unknown. The lack of refinement in cultural component designations is also indicative of a limited understanding of local prehistory.

The lack of information prohibits a more detailed analysis of the archeological potential of this region.

Discussion

Although our understanding of archaeological resources in the Alton, LaGrange, and Peoria pools has advanced significantly in the past five years, a detailed analysis is fraught with serious limitations, which include:

- 1. The lack of geological investigations to document to geoenvironmental context of archaeological sites. Although detailed studies have been conducted in the Alton Pool, they are limited to transects defined by levees and drainage ditches. More systematic studies in this pool would improve models of valley geomorphic history and thus, our understanding of the potential for buried archaeological sites. Without this information, comparison of site distribution is serious compromised by the lack of understanding of river depositional history.
- 2. A lack of extensive, statistically representative systematic survey. This problem is particularly acute in the Peoria Pool, but large sections of the floodplain in the LaGrange and Alton Pools are unsurveyed. Hajic (1987:4) notes the

importance of refined landscape categories to firmly establish the geoenvironment of archaeological sites.

3. A lack of quantified information on the spatial extent of surveys, landforms, and water bodies. Although a noteworthy exception is the work of Hassen (1985), few survey reports provide adequate quantified information on the survey extent and the size of landforms. The lack of this type of information makes comparisons between pools unreliable.

Much of what we know about archaeological resources in the Illinois River floodplain is attributable to work sponsored by the U.S. Army Corps of Engineers. Investigations of the Alton Pool provide the clearest understanding about the distribution and sites along the river shoreline. antiquity of This is attributable, in large part, to geological and shallow geomorphological studies funded by the U.S. Army Corps of Engineers. The results of these studies are models of valley geomorphic history and a identification of the geoenvionmental context of archaeological sites. To overcome the limitations described above and to enhance the capability of the IWADB, it is essential that similar geological studies be conducted in the LaGrange and Peoria Pools.

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Structural Inventory at the Illinois Waterway Locks and Dams:
A Reconnaissance Level Survey of Historic Resources

Prepared by the Rock Island District, U.S. Army Corps of Engineers North Central Division, Rock Island, Illinois

Planning Division Environmental Analysis Branch

STRUCTURAL INVENTORY AT THE ILLINOIS WATERWAY LOCKS AND DAMS: A RECONNAISSANCE LEVEL SURVEY OF HISTORIC RESOURCES

TABLE OF CONTENTS

Subject	<u>Page</u>
Introduction	1
Scope of Work	1
Environmental Setting	2
General History of the Illinois River Valley	3
Introduction Aboriginal Occupation Colonial Settlement French Settlement British Settlement Euro-American Settlement Post Civil War Expansion and Industrialism Overland Transportation Illinois River Valley and Associated Navigation Strategies Recent Perspectives	3 4 4 5 6 7 9 10 10
Cultural Resource Coordination	16
Coordination Abstracts Cultural Resources Addressed in Corps of Engineers Technical Reports Dredging and Dredged Material Placement, Guidance, and Associated Documentation	16 18 21
Bibliography	24

<u>List of Appendices</u>*

- I: Corps Cultural Resource Coordination
- II: Summary of the University of Illinois Circle Campus Team Report
- III: Dredging Guidance Letter and Appendix
 - IV: Reports of the Chief of Engineers. Volumes I and II
 - V: Structural Inventory at the Illinois Waterway Locks and Dams
- * Appendices not for public distribution. On file with Rock Island District.

STRUCTURAL INVENTORY AT THE ILLINOIS WATERWAY LOCKS AND DAMS: A RECONNAISSANCE LEVEL SURVEY OF HISTORIC RESOURCES

INTRODUCTION

A reconnaissance level investigation was conducted to inventory historic properties which could be impacted by improvements to the Illinois Waterway pursuant to the National Historic Preservation Act, as amended. This report supplements the Rock Island District, Corps of Engineers', reconnaissance study to determine future navigation improvements on the Illinois Waterway which may warrant Federal involvement in their planning and construction. The purpose of the District's study is to determine if any alternatives are economically feasible and, therefore, should be recommended for additional detailed study in the feasibility phase.

A system-wide Environmental Impact Statement (EIS) will be prepared during the feasibility phase to determine the effects of any recommended improvements to the Illinois Waterway System. The EIS will include an assessment of impacts to historic properties. The information contained in this report complements archeological information presented in two reports entitled The Illinois Waterway Archeological Data Base and An Archeological Survey of the Banks of the Illinois River from Naples to Starved Rock Lock and Dam prepared by the Illinois State Museum under contract to the Rock Island District.

SCOPE OF WORK

This reconnaissance level survey of historic resources focuses on historic structures associated with the operation and navigation of the Illinois Waterway System. Specifically, the research for the scope of work encompassed Illinois River mile 80, just downstream of the LaGrange Lock and Dam, to mile 326.5 at the Thomas J. O'Brien Lock and Controlling Works. Over 320 river miles of the Illinois Waterway begins at the confluence of the Illinois and Mississippi Rivers at Grafton to the Chicago and Calumet Harbors in Lake Michigan. The system consists of 8 locks and dams and approximately 140 structures, all located on federally owned land.

The exact number of extant structures only can be estimated due to continual upgrading, demolition, and additions. All the locks and dams exhibit structures dating from the initial construction of each complex, although condition, context, integrity, and setting vary dramatically. This structural inventory provides information on these important characteristics and documents locational and historical information with relevant cultural resource coordination.

ENVIRONMENTAL SETTING

Information contained in this section was obtained from the February 1975 Corps of Engineers Final Environmental Statement entitled, Operation and Maintenance of a Nine-Foot Channel in the Illinois Waterway (Chicago District, U.S. Army Corps of Engineers 1975).

The Illinois Waterway has its origins in the glacial advance and retreat over 10,000 years ago. Glacial activity caused the natural division of the Illinois River into upper and lower portions. From its source to the Hennepin area, the river flows in a glacial channel. Downstream from the Hennepin area, the river flows through an unglaciated channel. Thus, the Illinois River has not always occupied its present location. Prior to the advance of glaciers, the Mississippi River flowed through the valley now occupied by the Illinois River between Hennepin and Grafton. As the glaciers advanced, they blocked this channel and pushed the Mississippi River westward to its current location.

During glacial retreat, the meltwater flowed through the old Mississippi River channel. As the glaciers retreated further, the Great Lakes were formed, draining and eroding through glacial deposits and bedrock as the present Illinois River channel. Near the end of the glacial epoch, the Great Lakes began to drain eastward to the Atlantic Ocean via the St. Lawrence River. This more youthful drainage eroded faster, because a rock divide developed between the Illinois River and the Great Lakes.

The natural boundary of the Illinois River watershed is about 28,000 square miles, of which approximately 1,000 square miles is in Wisconsin, 32,000 in Indiana, and 24,000 in Illinois. About 40 percent of the State of Illinois is drained by the Illinois River. The Chicago Sanitary District added over 800 square miles of the Lake Michigan watershed to this by reversing the flow of the Chicago and Calumet Rivers and intercepting certain drainage areas along Lake Michigan. Today, the combined watersheds total approximately 29,010 square miles.

The Illinois River Basin is in the climatic zone known as the "Continental Interior." This zone has a wide range of annual temperatures, characterized by four distinct seasons. The average annual precipitation ranges from 32.0 inches at Chicago to 38.0 inches at Grafton. The average annual precipitation for the entire Illinois River Basin is 34.5 inches.

The mineral resources of the Illinois River have been under development since initial settlement. Minerals and mineral products which have been exploited include coal, sand, gravel, crushed limestone and dolomite, portland cement, natural (hydraulic) cement, lime, silica sand, glass, sodium silicate, refractory clay, refractory brick and block, common and face brick, hollow building tile, light-weight aggregate, condensers for

zinc smelting, building stone, and peat. The source materials for these industries are sand, gravel, clay, and peat in the Pleistocene deposits; clay, shale, limestone, and coal in the Pennsylvanian rocks; and limestone and dolomite in the Ordivician, Silurian, and Mississippian rocks.

GENERAL HISTORY OF THE ILLINOIS RIVER VALLEY

INTRODUCTION

The Illinois River Valley is located solely within the State of Illinois from its headwaters near Chicago to its confluence with the Mississippi River north of St. Louis. The Illinois River Basin or watershed is much larger and extends into Wisconsin and Indiana. As one of the more important water sources, the Illinois River connects two of the largest urban centers in the Midwest -- Chicago and St. Louis. The Illinois River is an integral part of an extensive navigation system of national economic significance, connecting the Gulf Intercostal Waterway and the St. Lawrence Seaway.

Historically, the Illinois River has been a major factor in the settlement of the State of Illinois, where its navigational status is ensured as the Illinois Waterway.

Within its boundary lines, the Illinois River is the only commercially navigable river today; however, bordering the State are the Mississippi River, the Ohio River, and Lake Michigan which are not only navigable, but connect Illinois with the Gulf of Mexico and the Atlantic Ocean (Ivens 1967:57).

Over 60 cities, towns, and villages rely upon the Illinois Waterway, including Peoria and Chicago, two of the largest urban centers in the Midwest.

Since the first European contact with the Indians, the Illinois River supported a land diverse in natural resources. These resources contributed to the development of a highly productive agricultural, industrial, recreational, and transportation system. The abundant water supplies within the Illinois River Valley contributed to this growth and to the richness and maintenance of the natural resources.

ABORIGINAL OCCUPATION

The Indians were first occupants of the Illinois River Valley. The wealth of natural resources provided food, water, and transportation necessary for some of their largest settlements. Numerous burial mounds lining the river valley stand as memorials to the significance of the river to these early inhabitants. The historic importance of the Illinois River can be traced to the origins and derivations of its name.

Illinois is derived from <u>ininiwek</u> or <u>ininiok</u> and finally to Illinois by the French. This term, signifying "Men," was the collective name of the confederacy of six tribes, once a mighty host, which formerly occupied this state and surrounding regions (Vogel 1963:38).

Therefore, Illinois refers to the Indians that inhabited the valley and the state (Vogel 1963:38).

When the French traders and trappers began to make regular trips to the Illinois River Valley, the Kickapoo and Potowatomi inhabited the northernmost potions along the shore of Lake Michigan. The Illinois Indians roamed the larger stretches of the state. In the mid-17th century, Kaskaskia Indians occupied their ancestral village on the Illinois River near Peoria (Federal Writer's Project 1939:17). Less than 20 years later, the Kaskaskia had occupied large stretches of the Illinois River near this town, which had expanded to an estimated 6,000 to 8,000 inhabitants (Federal Writer's Project 1939:17).

The Kaskaskia were one of major tribes of Indians comprising the Illini Federation. The other tribes were the Peoria, Cahokia, Tamaroa, Moingwena, and Michigamie (Vogel 1963:38). "About 1680 the Iroquois descended upon the Illinois tribes, wiped out the principal villages, and pursued some of the conquered bands down the Illinois River" (Federal Writer's Project 1939:18).

COLONIAL SETTLEMENT

Colonial settlement of America, as well as exploration of the Illinois River Valley, was initiated to discover trade routes to the East Indies. Europeans quickly realized the abundant resources, strengthening trade relationships with indigenous Indians and exploring the land known by the French as the Illinois Country. As with the Indians which preceded them, Europeans used the Illinois River Valley as a significant trade route and impetus for settlement.

FRENCH SETTLEMENT

The first French explorers in the Illinois Country were Louis Jolliet, a French government agent, and Father Jacques Marquette, a Jesuit priest. Together with their voyageurs, they are credited with the discovery of the Illinois River Valley while searching for the long sought after river to the East Indies. Marquette and Jolliet

... set out from Green Bay in the early summer of 1673. By way of the Fox and Wisconsin rivers, they made their way to the Mississippi River, which they descended far enough (the mouth of the Arkansas) to be certain that it emptied into the Gulf of Mexico rather than into the Gulf of California. Returning, the explorers proceeded up the Illinois River and over the Chicago portage to lake Michigan and Green Bay, thus becoming the first white men ever to transverse the present state of Illinois (Angle and Beyer 1943:10-11).

These explorations were significant in that Marquette and Jolliet discovered the portage which would later be influential in the founding of Chicago as a connecting link between the Mississippi River and Lake Michigan (Tweet 1983:3), but possibly more important, maps were made of the journey (Madden 1974:16-17). Although a navigation route to the East Indies did not exist, the lands discovered held great trade potential.

In 1678, a French military occupation, to claim more lands and produce more accurate maps, was headed by Robert Cavalier, Sieur de La Salle. La Salle received permission from the French government to explore the upper reaches of the Mississippi River drainage, then called Upper Louisiana Territory, and to establish forts (Sparks 1904:222; Tweet 1983:4). Explorations eventually resulted in the occupation of the Illinois River Valley by fur traders and farmers. Henri de Tonti and La Salle built Crevecoeur near the outlet of Lake Peoria in 1680. It was destroyed by mutinous followers soon afterwards (Angle and Beyer 1943:11).

In 1682, Fort St. Louis was constructed by La Salle on the top of Starved Rock and served as the principle French stronghold in the Illinois Country for a decade (Angle and Beyer 1943:11). Starved Rock is a geologic exposure of the La Salle anticline and one of the more prominent features located within the Illinois River Valley. La Salle also built a halfway house at Chicago (Church 1931:21-22), an Indian name which has been interpreted as "Stinking Weed" or "Skunk Weed" denoting the smell of the indigenous garlic or wild onion (Vogel 1963:24-25).

La Salle's plan for defense and safe, secure trade routes was successful. Fort St. Louis was strategically situated across the river from the Grand Village of the Kaskaskia, first discovered as a village of 73 cabins in 1673 by Jolliet and Marquette (Brown 1961:7). The Iroquois, spurred by the British to the north, destroyed the Kaskaskia village in the fall of 1680 (Brown 1961:7).

Seeking protection from the Iroquois, the tribes of the Illinois Country rallied at Fort St. Louis under La Salle's patronage and the Kaskaskia village eventually grew to 550 cabins with a total population estimated at its height to be between 6,000 and 9,000 persons (Brown 1961:7). After La Salle's death in 1687, Tonti replaced him as chief representative in the West (Madden 1974:18). "When he was granted, by the King of France, the sole right to the fur trade of Illinois and the West, he decided to move Fort St. Louis to a place farther from the dreaded Iroquois where at the same time it was easier to get food and water" (Church 1931:25). This place was called Peoria after one of the five tribes of the Illini Federation (Vogel 1963:108).

By 1692, the tribes of the Illini Federation and other smaller tribes, such as the Maroa and Chinkoa, moved to Peoria, where for two generations the French and Indians made it a center of trade around a strong fort and a thriving village (Church 1931:25). Also known as Fort Pimiteoui or Tonti's Fort (Brown 1961:8), Fort St. Louis at Peoria was the largest trade center on the Illinois River and was used as the base for many of Tonti's expeditions, to trade for furs and drive back the Iroquois (Church 1931:25).

By the early 1700's, French settlement within the Illinois Country increased. With this influx, maps and other documents become more abundant, accurate, and artistic (Madden 1974:18). In the early 18th century, these settlers recorded the Illinois River Valley (Madden 1974:20). This documentation contributed to increased settlement and more permanent occupation.

By 1717, the Illinois Country was attached to the French District of Louisiana and administered by commandants appointed from New Orleans (Angle and Beyer 1943:15). Upper Louisiana, of which the Illinois Country was a part, contained some ten thousand inhabitants (Sparks 1904:222). "The upper country sent down annually a hundred thousand dollar's worth of lead and skins, although the most valuable furs were smuggled over to English Canada, where they brought high prices" (Sparks 1904:222-223).

The Seven Years War from 1753 to 1763, also called the French and Indian War, was a struggle with the British for the western lands in America (Sparks 1904:75). "By the Treaty of Paris in 1763, title to the Illinois Country passed from France to Great Britain, although British troops did not occupy the Illinois Country until two years later" (Angle and Beyer 1943:15).

BRITISH SETTLEMENT

The richness of the Illinois Country with its natural abundance and extensive trade networks has been identified as an influence resulting in causes of the American Revolution (Angle and Beyer 1943:17). Under the

Proclamation of 1763, George II and the British Royal Council forbade settlement of the lands west of the crest of the Alleghenies to pacify the Indians (Angle and Beyer 1943:17).

Unlike the French, the British did not occupy the Illinois River, but forced many laws and regulations upon the inhabitants. With the American Declaration of Independence in 1776, the French became allies. This sympathy with the revolutionists contributed to George Rogers Clark's successful plan to occupy the Illinois Country as a part of Virginia (Church 1931:53).

"Leading a party of 170 men, Clark crossed Illinois in a daring march in February, 1779" and took major British strongholds on the Mississippi, Ohio, and Wabash Rivers. "Later attempts by the British to reconquer the Illinois Country with a thrust through the Illinois River valley failed" (Angle and Beyer 1943:18).

Illinois was claimed by Virginia until the Revolutionary War between Britain and America in 1784 (Church 1931:59-60). Following the war, the new territory became a part of the Northwest Territory, and it was up to the new county to decide how to settle and govern itself under the westward advance of future settlers (Church 1931:59-60).

EURO-AMERICAN SETTLEMENT

After the Revolutionary War, Americans of European origin who settled westward or Europeans who remained as American citizens are referred to as Euro-Americans due to their former origin. These people predominated within the Northwest Territory, an area which presently includes Illinois, Wisconsin, Michigan, Indiana, and Ohio. The Ordinance of 1787 was devised by Congress to appoint and support a government for this territory, until population was sufficient to form states for admittance into the Union (Sparks 1904:118).

In 1800, Illinois became part of the Indiana Territory with the seat of government in Vincennes on the Wabash River. William Henry Harrison was appointed governor of this territory (Church 1931:67). At this time, Illinois had a population of 2,500, almost all of French descent (Church 1931:67). It was after the War of 1812 before large tracts were opened by the government, when the people of the territory voted to become self-governing (Church 1931:70).

Illinois remained sparsely settled due to its western position, unfamiliar prairie lands lacking trees, and numerous wetlands (Church 1931:68). Following the signing of the Treaty of Ghent in 1814, the first of the public lands in Illinois were sold (Angle and Beyer 1943:22). By 1818, population was sufficient that Illinois was accepted to the Union, although this settlement was primarily confined to Southern Illinois.

Lack of capital and few educational facilities existed in support of internal improvements in early 19th century Illinois. During this period, Euro-American settlement progressed from south to north. In 1825, a tremendous shift in population occurred when the Erie Canal brought swarms of immigrants by way of the Great Lakes. Four years later, the first steamboat reached Peoria and quickened the pace of settlement along the navigable rivers and streams (Church 1931:80). By 1830, the state had a population of over 150,000 with the Illinois River as the northern boundary of settlement (Church 1931:79), with a growing population surrounding Lake Michigan.

The state continued to grow in leaps and bounds, and in the 1830's settlement was north of Peoria (Angler and Beyer 1943:23). Farming was confined to the Mississippi and Illinois River Valleys during these early years, since fuel, water, building materials, and transportation were at hand, the river being the only connection with the outside world (Church 1931:80).

This northern settlement was stifled in 1831 when the Sauk and the Fox went to war in defense of the Rock River Country. This led to the total defeat of the last stand of Indians in Illinois and their eventual removal west of the Mississippi (Angle and Beyer 1943:24). With the removal of the Indian threat and reductions in public land costs, settlements increased. Early settlement depended upon river navigation for the shipment of furs, skins, honey, corn, whiskey, venison, beef, and pork down the Mississippi and Illinois Rivers to New Orleans (Federal Writer's Project 1939:28).

After 1830 northern Illinois was not only settled rapidly; it was settled principally by "Yankees" whose habitats, backgrounds, and points of view were often radically different from those of their neighbors to the south (Angler and Beyer 1943:23).

In the twenty-two years following the admittance of Illinois to statehood, vast changes had taken place in the area. By 1840 nearly every portion had been settled except for the vast, almost treeless Grand Prairie, the bulk of which stretched down for about 200 miles through northeastern Illinois (Madden 1974:169).

A new state constitution was adopted in 1848, a direct result of the dramatic increase in population from 157,445 in 1830 to 851,470 in 1850 (Federal Writer's Project 1939:31). The extensive population and fertile land prompted investment from the Eastern capitalists in the numerous successful speculative ventures and improvements which immediately preceded and followed the Civil War.

POST CIVIL WAR EXPANSION AND INDUSTRIALISM

"Nowhere in the United States did the railroad fever of the fifties rage more than in Illinois" (Federal Writer's Project 1939:33). This had a profound effect upon the earliest settlements in the Illinois River Valley. The railroad opened up the fertile prairies of the vast Illinois interior to farmers, releasing its potential as one of the greatest agricultural areas in the world. Illinois, like the majority of the states of the old Northwest Territory, became a melting pot of Southerners, Easterners, and foreign born.

By 1850 Illinois was moving toward wealth and greatness with ten incorporated cities, four of which, Chicago, Peoria, Pekin, and Beardstown, were located on or close to the Illinois River, and all relied upon it extensively for transportation purposes (Madden 1974:243).

The Erie Canal, Great Lakes, and Illinois River improvements strengthened Illinois' cultural and economic ties with the eastern seaboard. Chicago soon realized its potential as a great industrial and manufacturing city and "... in ten years from 1845 to 1855, had grown from 12,000 to over 82,000 inhabitants (Larson 1978:92).

Northern industry and transportation networks contributed to differences between the North and South, leading to the Civil War. Water navigation improvements were kept at a minimum during the Civil War between 1862 and 1865, although the prosperity of Chicago and northern Illinois grew. This growth can be attributed to the excellent transportation facilities and the fact that conflicts and other wartime damage never occurred within the boundaries of Illinois.

Lead was one of the first industrial mining ventures, but this was replaced by iron, oil, and coal following the Civil War. The development of mining and industry contributed to the organization of labor and the development of commercial and federally funded transportation systems, as it did in much of the settled nation. Illinois was well suited to industry; it had great natural resources, improving transportation networks with extensive fuel, and was close to the iron deposits and forests of the Great Lakes.

Due to sufficient labor, temperate climate, and adequate transportation facilities, the milling of flour and packing of meats shifted from the eastern states to Chicago (Angler and Beyer 1943:51). These industries stimulated further improvements in transportation and resulted in the extensive growth of the Illinois River Valley towns and cities. As these urban areas grew, the functions that they performed gradually increased in complexity, resulting in more services for the benefit of their inhabitants. American expansion into the Illinois River Valley has been marked by individual opportunity, due to the unparalleled resources of the soil, water, and climate.

OVERLAND TRANSPORTATION

Overland transportation following the Civil War focused on railroad construction, although the importance of roads and highways to pedestrians, pack animals, and wagons cannot be ignored. While the railroad contributed heavily to industrial growth and settlement, commercial road travel was primarily a seasonal venture consisting of the movement of grain wagons to rail centers. The railroad grew dramatically following the Civil War. Between 1870 and 1880, over three thousand miles of railroads were constructed (Church 1931:216).

Before the railroad, coal mining was unimportant in the state, but after rail lines were connected, locomotives began to use coal instead of wood for fuel (Federal Writer's Project 1939:64). Much of the industrial development of the Midwest hinged upon the use of the extensive coal deposits for fueling locomotives and industrial machinery. Industrial and mail order houses combined nearly competed with grain and livestock for domination of overland rail shipping (Federal Writer's Project 1939:64).

Before the 20th century, roads were commonly a quagmire of mud or a ribbon of dust, although improvement and construction grew tremendously with the introduction of the automobile, bus, and truck. Progressive road programs were undertaken by acts of Congress in 1916 and 1919, and state bond issues in 1918 and 1924 provided funds for construction (Federal Writer's Project 1939:68). "By 1937, exclusive of city streets, there were some 13,000 miles of concrete, brick, or bituminous surfaced roads" (Federal Writer's Project 1939:68).

The internal combustion engine also resulted in the industrialization of agriculture in the early 20th century, a boon to the farming of the Midwest only equaled by the settlement of the fertile prairies in the mid-19th century.

ILLINOIS RIVER VALLEY AND ASSOCIATED NAVIGATION STRATEGIES

When the U.S. Army Corps of Engineers (Corps) began improvements on the Illinois River, its engineers had already contributed over a century of serving the nation. Since the Revolutionary War, the Corps was relied upon to plan and to supervise the erection of field fortifications. After the War of 1812, John C. Calhoun, then Secretary of War, recommended that the Corps be directed to improve transportation systems. In 1824, this recommendation was accepted, and Congress authorized the development of water transportation.

Canals

The first Corps influence immediately apparent in the early 19th century was surveying proposed water routes. Soon, sectional influences resulted in Corps involvement in canal navigation through regulatory strategies. Lasting from the mid-1820's to the Civil War, the Canal Period was fostered by the tremendous success of the Erie Canal from Albany to Buffalo, New York (Tweet 1984:149). The Erie Canal

... had begun to pay for itself in tow fees even before the entire 363 miles was completed in 1825. It brought tremendous growth to the cities along its path (Tweet 1984:149).

Initiating this Canal Period, the Erie Canal influenced the construction or planning of more than 4,000 miles of other canals in the United States (Tweet 1984:149). The majority of canal projects were aimed at increasing regional development under the guise of national interests and were funded through large land grants, acquisitions, and surveys.

In 1822, the Congress of the United States passed an act authorizing the State of Illinois to open a canal to connect the Illinois River with Lake Michigan (Snively, et al., 1900:61). Although sectional rivalry within Illinois and the Panic of 1837 slowed the construction of the Illinois and Michigan Canal, it was officially opened for navigation in 1849. In 1882, the Government refused an offer by the Illinois General Assembly to cede the rights to the Illinois and Michigan Canal to the United States (Tweet 1984:184); state interest eventually was relinquished in 1900.

Formal proposals for a canal from the Illinois River to the Mississippi River began as early as 1832 (Tweet 1984:151). Numerous surveys and routes were conducted by the Corps, State of Illinois, and entrepreneurs. Definite plans were not carried out until 1872, when President Ulysses S. Grant, a former resident of northern Illinois, appointed a committee to study the benefits for an Illinois to Mississippi Canal route (Tweet 1984:153). Congressional authorization by the Act of August 2, 1882, directed the Secretary of War to survey and locate the Illinois and Mississippi Canal, later called the Hennepin Canal (Tweet 1984:154). Although the Hennepin Canal opened in 1908, its conception was a direct outgrowth of the Canal Period (Tweet 1984:147).

While the Illinois and Michigan Canal was a State project, the Hennepin Canal had "... difficulty because many Congressmen were reluctant to support what they considered a local project, totally within one state, with Federal funds" (Tweet 1984:154). Although both canals were implemented to strengthen interests between the East and the West (Tweet 1984:148, 152), their primary importance was as a system to regulate local railroad freight charges.

Both canals were compatible, following the general design of other 19th century American canals. However, the Hennepin Canal was built on a

slightly larger scale with more sophisticated machinery and structural concrete. Prism widths of these canals were between 60 and 80 feet with channel depths of 6 to 7 feet. Although the canals were located in areas of low relief, water flow and control resulted in high maintenance. Connecting Lake Michigan to the Mississippi River, then Chicago, New York, St. Louis and New Orleans, the canal systems were grandiose strategies which never were realized fully, although they served as catalysts for regional growth.

Although canal construction increased commercial speculation, navigation peaked within a few years following construction. By 1851, the Illinois and Michigan Canal had become a traffic bottleneck on the Illinois River, and by 1907, when the Hennepin Canal was open to navigation, the Illinois and Michigan Canal was so deteriorated it was barely navigable (Yeater 1977:19).

Unlike the early years of the Illinois and Michigan Canal, the Hennepin Canal never attracted regular freight service, attaining only 1/600 of its theoretical potential (Tweet 1984:154, 185). The early 19th century promotion of a Michigan to Mississippi River canal system may have actually contributed to railroad development. In 1854, the tracks of the Chicago and Rock Island Railroad reached the Mississippi River at Rock Island (Tweet 1983:37), beating the completion of the Hennepin Canal to its Mississippi terminus near Rock Island by over 50 years.

Like many navigation projects, canal strategies were primarily sectional in outlook, focusing on developing and regulating, rather than connecting, economic markets. It was the regulatory outlook, developed during this period, which resulted in the eventual completion of the Illinois and Michigan and Hennepin Canal System even though obsolescence was inevitable (Tweet 1984:185).

In 1890, a board, comprised of three Army Engineer officers appointed by the Secretary of War, studied the significance of the Illinois and Michigan Canal. They reported:

It is a matter of very little consequence ... whether the canal carries any freight or not so long as the fact that it is there, and in readiness for the purpose affects the charges by rail (Larson 1978:189).

In the same year, Captain W. L. Marshall, Chiefs of Engineers, said of the Hennepin Canal:

It is a fact too well known to require extended discussion, that water routes generally when they come into competition with transportation by land, are the most efficient and certain regulators of freight charges known. There is nothing so democratic as free waterways and highways constructed and maintained by the public for the people (Tillinghast 1898:106).

In 1907, a year before the Hennepin Canal was opened, Congress authorized the Upper Mississippi River 6-foot channel. The Illinois and Michigan and Hennepin Canals could not be easily improved by comparative enlargement (Tweet 1984:189), an inherent problem in most canal systems. The demise of canal navigation in Illinois resulted from continued improvements to the free flowing waters of the Upper Mississippi and Illinois Rivers (Tweet 1984:185).

In the early 20th century, there were three paths of navigation from Lake Michigan to the Mississippi River. One route followed the Fox and Wisconsin Rivers connected by the Portage Canal, the second was the Illinois canal system, and the third was by way of the Sanitary and Ship Canal to the Des Plaines and Illinois Rivers. Corps-related canal projects, beneficial to the early 19th century development of local markets, held little influence in national transportation and trade networks. Also, individual navigation ventures rapidly declined in favor of corporate barge fleeting.

Illinois and Mississippi Navigation

During this period, the Corps viewed natural waterways as a less expensive and more progressive alternative than canals. Attention was given to the Illinois and Mississippi Rivers as potential transportation routes since first explored by Marquette and Jolliet in 1673 (Tweet 1984:61). The first significant improvements to the Upper Mississippi River Basin involved individually authorized improvements, supporting a systemic strategy. Surveys were required for accurate evaluations, and a systemic approach maximized benefits. Evaluations and approaches focused on engineering capabilities and changing river traffic, both of which followed improving avenues of growth and expansion.

Unlike canals, river navigation requires operation and maintenance of channels. Navigation of free-flowing waterways was protected from private ownership and tolls in observance of the Northwest Ordnance of 1787. Rock removal, dredging, locks, and dams, were the principle improvements to natural channels during this period. When the earliest Corps surveys of the Upper Mississippi River Basin occurred in the early 19th century, a river transportation network was well established following existing natural channels. The beginnings of permanent river improvement followed the Civil War. Congress saw the Mississippi River as a means of uniting the North and the South (Tweet 1983:47). From 1866 to 1882, the President signed 16 rivers and harbors bills (Reuss and Walker 1983:12).

The Mississippi and Illinois River improvement strategies were based upon a general view that the weakest link in a system receives the maximum

efficiency in load. Thus, problem areas were identified as weak points in the system, such as the Des Moines and Rock River Rapids. These rapids were natural deterrents to navigation, requiring boats with shallow drafts. To achieve maximum efficiency in load, steamboats became lighter and less bulky, and the Corps constructed canals and removed rock to increase water depth.

Although steamboat traffic began to decrease during the years following the Civil War, short-haul traffic remained fairly constant (Tweet 1983:26). Steamboat traffic decreased as a result of the growing use of rail travel and increasing use of barges and tows. The increased tonnage realized for bulk goods could compete with the railroads as the agricultural development and potential of the Midwest was realized. For the Mississippi River and Illinois Rivers to remain competitive with overland transportation, continued improvement and maintenance were necessary.

Early Illinois River improvements were the result of the combined efforts of the Corps and the State of Illinois. These improvements consisted of Corps snagging, wing dams, dikes, and dredging, while both the State of Illinois and the Corps constructed locks and dams (Chiefs of Engineers 1879:1575-1577). The construction of locks and dams at Henry in 1869, Copperas Creek in 1877, LaGrange in 1889, and finally Kampsville in 1893 were similar in size to contemporary locks on the Mississippi. Further recommendations to Congress by the Corps were relegated toward improvements of slack water navigation (Chiefs of Engineers 1879:1580) and subsequent authorizations resulted in the emergence of the Illinois Waterway System with its standardized channel and locks.

In 1900, the upper end of the Illinois and Michigan Canal was replaced as far south as Lockport by the Chicago Sanitary and Ship Canal, which, through construction primarily for sanitary purposes, also provided sufficient depth for navigation. In 1908, the people of the State of Illinois took a further step with the approval of a \$20 million bond issue for the canalization of the Des Plaines and Illinois Rivers from Lockport to Utica. However, construction was not commenced until 1921.

In 1922, the Metropolitan Sanitary District of Greater Chicago completed construction of the Calumet-Sag Channel for the purpose of preventing pollution of Lake Michigan by reversing the flow of the Calumet River. The channel connected the heavy industrial area surrounding the Calumet River with the waterway and was used for navigation. By 1927, the formal authorization for the U.S. Army Corps of Engineers to perform operational and maintenance activities on the Illinois Waterway was given by the Rivers and Harbors Act, as modified by the Rivers and Harbors Act of 1935, and 1950.

Under these acts, the Federal Government assumed responsibility for the still unfinished waterway, completed the project, and opened the Illinois Waterway to navigation 3 years later. Since that time, it has been maintained and operated by the U.S. Army Corps of Engineers. The Illinois Waterway was further improved during the years 1936 to 1938 with the

construction of two modern locks and dams at Peoria and LaGrange to replace four outmoded installations between Utica and Grafton.

All the locks on the Illinois Waterway, except Thomas J. O'Brien, are 110 feet wide and 600 feet long and are capable of handling, in single lockages, tows consisting of a towboat and eight jumbo barges with a total cargo capacity of over 10,000 tons. The five locks in the upper section of the waterway are electronically controlled, while the LaGrange and Peoria Locks in the lower reach, which are completely submerged during periods of high water, are hydraulically operated. During periods of high water, when ample water depths are available, the wickets are lowered to the river bottom and river traffic passes freely over the lowered wickets without the necessity of locking.

The Thomas J. O'Brien Lock, completed in 1960 in the Calumet River immediately south of Chicago, differs in size from the seven "main stem" waterway structures. Measuring 1,000 feet in length and 110 feet in width, the O'Brien Lock is capable of accommodating larger tows without the necessity or rearranging the barges. The Thomas J. O'Brien Lock was constructed as a part of the Calumet-Sag Navigation project.

RECENT PERSPECTIVES

Today, the social and economic growth of the Illinois River Valley continues, due in part to adequate water resources of the Illinois River. Views toward the river have been changing, from predominantly a navigation channel, to include recreation, environment, and agriculture interests as a holistic Corps environmental management strategy. This strategy includes coordination with the proper Federal and State agencies while maintaining a balance between a multitude of interests.

Today, the Illinois Waterway is completely navigable at a minimum depth of 9 feet over its entire stretch of 327 miles from its junction with the Mississippi River at Grafton to Lake Michigan at Chicago Harbor and at Calumet Harbor and River. The 36-mile-long stretch from Lake Michigan to Lockport is controlled by a lock and powerhouse at the latter point. Passing through the Chicago metropolitan area, it utilizes the Chicago River, the south branch of that river, and the Chicago Sanitary and Ship Canal as well as the Calumet and Little Calumet Rivers and the Calumet-Sag Channel.

There are two locks and controlling works above the Calumet-Sag junction. The Metropolitan Sanitary District of Greater Chicago owns and operates a lock (80 feet wide and 600 feet long) and controlling works at the mouth of the Chicago River. This location is actually part of the deep-draft navigation project and not a portion of the 9-foot navigation project. The Corps of Engineers constructed the Thomas J. O'Brien lock (110 feet wide by 1,000 feet long) and controlling works on the Calumet River.

From Lockport south, some 60 miles downstream, the waterway utilizes the Des Plaines and Illinois Rivers and consists of a series of four pools which have been created by non-navigable fixed dams and locks. The waterway falls 139 feet. Locks and dams controlling navigation along this stretch include Brandon Road, Dresden Island, Marseilles, and Starved Rock.

Through the 231 miles from Starved Rock to Grafton, the waterway falls more gently at the two remaining locks and dams at Peoria and LaGrange. Below LaGrange to Grafton, a distance of 86 miles, the route is maintained for barge traffic by Lock and Dam 26 in the Mississippi River at Alton.

The growth of traffic on the Illinois Waterway has been phenomenal since its completion by the Corps in 1933. Commercial navigation on the waterway, which amounted to nearly 1.7 million tons in 1935, reached 3 million tons in 1940, and in 1977 amounted to over 44.5 million tons of coal, petroleum products, grain, soy beans, sand and gravel, sulfur, iron, and steel products.

CULTURAL RESOURCE COORDINATION

The correspondence in Appendix I consists of Corps modification, rehabilitation, and construction actions on the Illinois Waterway which were coordinated with the Illinois State Historic Preservation Officer (SHPO). To date, the Illinois Waterway has not been considered eligible to be listed on the National Register of Historic Places (NRHP). No individual buildings or structures associated with the Illinois Waterway have been determined to be NRHP eligible.

Previously coordinated Corps actions have included buildings lacking integrity or lands composed entirely of construction fill. Many of these constructions, modifications, and removals were necessary to efficiently manage and operate the Illinois Waterway. Project abstracts of Appendix I are included in this section under Coordination Abstracts. Also, a bibliography of cultural resources addressed in Corps technical reports is included. Dredging and dredged material placement, guidance, and associated documentation are included in this section as part of the ongoing cultural resource data base for coordination operation and maintenance activities.

COORDINATION ABSTRACTS

On August 27, 1982, the SHPO concurred with the Corps determination of no significant cultural resources on 1.8 acres required for widening the access road to the Dresden Island Lock and Dam. No historic properties had been previously documented in this area.

On August 11, 1983, the Corps received SHPO concurrence for the removal of 14 lockmaster's residences located at 7 locks and dams. These 20th century residences were determined to be ineligible for the NRHP due to their age and lack of structural integrity. The residences included garages, fire houses, and landscaped lawns. Although the fire houses and garages still exist at a few of the locks and dams, all of the houses have been removed except at Brandon Road. These remaining residential structures are scheduled for removal.

The Corps provided documentation to the SHPO to support a determination of no significant cultural resources for the construction of a maintenance and shop building at Peoria Lock and Dam. The construction received SHPO concurrence on January 3, 1986. It also was determined that fill associated with the original construction of the lock and dam was present to a depth exceeding 6 feet.

On January 31, 1986, the Corps received SHPO concurrence of No Effect for the construction of the New Control Station at Marseilles Lock and Dam. The proposal included an access road to the new structure and a septic field. Archeological reconnaissance revealed that the proposal would occur in areas previously disturbed by Corps construction of the lock and dam.

The Corps received SHPO concurrence of No Effect for the addition of a storage building at Starved Rock on March 5, 1986. No historic properties were discovered, and the existing land surface recently was accreted.

High mast lighting at Peoria and LaGrange received SHPO concurrence for a Corps determination of no impact to historic properties on November 14, 1988. The Corps stated that the Peoria and LaGrange Lock and Dam complexes are not eligible for listing on the NRHP, thus the proposed lighting would have no impact to significant historic properties.

The Corps received SHPO concurrence on September 19, 1989, for a No Effect determination for the construction of Maintenance and Shop Buildings at Illinois River Lock and Dam 2 at Lockport and at Lock and Dam 4 at Dresden Island. The land surface was thoroughly disturbed by lock and dam construction during the 1930's; specifically, by extensive filling to elevate to 100-year flood levels. Also, the proposed Maintenance and Shop Building construction was determined not to affect any NRHP eligible or listed properties.

On November 1, 1989, the Corps received SHPO concurrence for the demolition of Illinois Waterway Project Office Buildings 301 (Office) and 303 (Garage). The structures were considered NRHP ineligible due to the lack of historical and architectural significance. Construction fill and subsurface disturbances in the early 20th century resulted in the absence of significant archeological and historic properties.

On December 4, 1989, the Corps received concurrence for the proposed rehabilitation of the 2-story, brick control stations at Peoria and LaGrange Locks and Dams. Constructed between 1933 and 1938, the control

stations were determined ineligible to the NRHP and were located in areas comprised entirely of fill. NRHP ineligibility was due to the lack of architectural significance and exterior integrity.

CULTURAL RESOURCES ADDRESSED IN CORPS OF ENGINEERS TECHNICAL REPORTS

The following technical reports focusing on the Illinois Waterway required State and Federal coordination and comment.

9-Foot Channel; Calumet-Sag

Final Environmental Statement; Operation and Maintenance of a 9-Foot Channel in the Illinois Waterway from the Junction of the Calumet-Sag Channel and the Chicago Sanitary and Ship Canal to the LaGrange Lock and Dam; February 1975

Brandon Road Lock and Dam

Preliminary Feasibility Study for Hydropower at Brandon Road Lock and Dam; May 1979

Brandon Road Lock and Dam

Final Feasibility Report for Hydropower; Brandon Road Lock and Dam, Illinois Waterway; Main Report with Environmental Assessment; January 1982

Brandon Road Lock and Dam

Major Rehabilitation; Design Memorandum No. 1 General Design Memorandum; April 1983

Brandon Road Lock and Dam

Major Rehabilitation; Design Memorandum No. 2, Joliet Channel Walls Rehabilitation; August 1984

Bureau Creek

Bureau Creek Damage Study as related to the Hennepin Canal; Department of Conservation; December 1975

Bureau Creek

Bureau Creek Surface Water Resources; Illinois Department of Conservation; March 1971

Calumet-Sag

Final Environmental Statement Illinois Waterway; Calumet-Sag Navigation Project, Illinois; Maintenance Dredging and Disposal; January 1975

Dresden Island

Final Feasibility Report for Hydropower; Dresden Island Lock and Dam, Illinois Waterway; Technical Appendices; January 1982

Dresden Island

Final Feasibility Report for Hydropower; Dresden Island Lock and Dam, Illinois Waterway; Main Report with Environmental Assessment; January 1982

Havana, Illinois

Toxicity of Sediments in the Illinois Waterway; Implications for the Proposed Increase in Diversion of Lake Michigan Water into the Illinois Waterway; July 1983

Joliet

Environmental Assessment; Diversion Dike Construction at Illinois Waterway Mile 290.1 Near Joliet, Illinois; October 1983

Joliet

Environmental Assessment; Diversion Dike Construction at Illinois Waterway Mile 290.1 Near Joliet, Illinois; October 1983

LaGrange Lock and Dam

Illinois Waterway, LaGrange Lock and Dam; Environmental Assessment for Major Rehabilitation; March 1986

LaGrange Lock and Dam

Reconnaissance Report Major Rehabilitation Master; December 1983

LaGrange Pool

Reconnaissance Study; LaGrange Pool, Illinois River, Illinois; August

Lockport Dam

Reconnaissance Report, Major Rehabilitation; Illinois Waterway, Lockport Lock and Appurtenant Structures; July 1977

Lockport Dam

Illinois Waterway, Chicago Sanitary and Ship Canal, Lockport Dam and Controlling Works; Reconnaissance Report; Major Rehabilitation; November 1984

Lockport Lock

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Lockport Lock

Illinois Waterway, Lockport Lock Major Rehabilitation; Design Memorandum No. 1, General Design Memorandum (with Environmental Assessment for Major Rehabilitation of Lockport Lock and Brandon Road Lock and Dam); May 1982

Locks and Dams 2-22

Mississippi River; Illinois Waterway from LaGrange to Lockport Locks

and Dams; Draft Programmatic Environmental Impact Statement Major Rehabilitation Effort; September 1988

Locks and Dams 2-22

Mississippi River; Illinois Waterway from LaGrange to Lockport Locks and Dams; Final Programmatic Environmental Impact Statement Major Rehabilitation Effort; March 1989

Marseilles Dam

Draft Feasibility Report for Hydropower; Marseilles Lock and Dam Illinois Waterway, Main Report with Draft Environmental Impact Statement, Volume I of II, July 1984; and Volume II of II; July 1985

Marseilles Dam

Marseilles Dam Protection Cells Environmental Assessment, Illinois Waterways, Marseilles Dam Illinois Waterway, Marseilles Dam Major Rehabilitation; Design Memorandum No. 1, General Design Memorandum and Draft Environmental Assessment; November 1984

Marseilles Dam

Marseilles Dam Protection Cells Environmental Assessment; Illinois Waterway; May 1988

Pekin, Illinois

Reconnaissance Report for Section 205 Flood Control; Illinois River; Pekin, Illinois: August 1983

Peoria and LaGrange Locks

Illinois Waterway, Peoria and LaGrange Locks and Dams Major Rehabilitation; Design Memorandum No. 1; Feature Design Memorandum; February 1987

Peoria Lock and Dam

Illinois Waterway, Peoria Lock and Dam; Environmental Assessment for Major Rehabilitation; March 1986

Peoria Lake

Reconnaissance Study; Peoria Lake, Illinois River Basin, Illinois; March 1987

Starved Rock

Feasibility Report for Hydropower, Starved Rock Lock and Dam, Illinois Waterway; Main Report with Environmental Assessment, Volume I of II; December 1982

Starved Rock

Feasibility Report for Hydropower, Vegetation Removal at Selected Areas Along the Chicago Sanitary and Ship Canal, Will and Cook Counties, Illinois: April 1985

The Final Environmental Statement, Operation and Maintenance of a Nine-Foot Channel in the Illinois Waterway, U.S. Army Engineer District, Chicago, Illinois (February 1975) is one of the more significant coordination efforts. This environmental statement focused on the operation and maintenance of the 9-foot channel, focusing on dredging and related activities. The University of Chicago Campus completed an archeological survey report relating to this project. Dredged disposal sites were archeologically surveyed and 129 sites were discovered. A summary of this report is in Appendix II.

Another significant coordination document is the final programmatic Environmental Impact Statement (EIS) entitled Major Rehabilitation Effort, Mississippi River Locks and Dams 2-22, Illinois Waterway from LaGrange to Lockport Locks and Dams (September 1988). This EIS was prepared to assess the environmental impacts to the Upper Mississippi River System from the major rehabilitation effort.

Pursuant to the EIS, the Rock Island and St. Paul Districts arranged for historical, architectural, and engineering studies to be conducted on Mississippi River Locks and Dams 3 through 22. Within the Rock Island District, Locks and Dams 11 through 22 were studied, evaluated, and described by Rathbun Associates in the report entitled Historical-Architectural and Engineering Study, Locks and Dams 11-22, Nine Foot Navigation Project, Mississippi River (December 1985) and determined to be NRHP eligible. The Historic American Engineering Record of the National Park Service was completed and accepted by the Library of Congress in November 1988.

DREDGING AND DREDGED MATERIAL PLACEMENT, GUIDANCE, AND ASSOCIATED DOCUMENTATION

A long-term management strategy for dredged material placement is presently being compiled by the Corps of Engineers for the Illinois Waterway. This report will be a companion volume to the April 1990 Long-Term Management Strategy for Dredged Material Placement: Upper Mississippi River Miles 300-614. Both reports contain the method that will be used to develop site plans for the placement of dredged material within the Rock Island District, U.S. Army Corps of Engineers.

Integral to these reports are cultural resource compliance and coordination. On March 13, 1989, the Dredging Guidance Letter regarding underwater Historic Resource Surveys at existing Corps Navigation projects was approved by the Director of Civil Works (Appendix III). The Dredging Guidance Letter and associated appendix was extensively coordinated at all Corps district and division levels and with the Advisory Council on Historic Preservation.

This procedural guidance and policy directs continued operation and maintenance of historic navigation channels and disposal areas, unless the

district engineer determines that there is a good reason to believe that historic properties exist and that the dredging or disposal will alter or affect properties. In cases where advanced maintenance dredging, channel modification, or new or enlarged disposal sites are required, a literature and archival research is warranted and may reveal the presence of or potential for submerged historic resources.

Literature and archival records within the Rock Island District will predominantly consist of, but not be limited to:

- (1) Annual Reports of the Chief of Engineers: Located in Appendix IV are excerpts to the indexes of the Reports of The Chief of Engineers, Volumes I and III. These volumes are used to compile a history of project improvements and references to wreck removals. Volume II is concerned primarily with special projects, while later Reports become less detailed and more standardized as congressional authorization increases.
 - (2) Historic maps of the Illinois Waterway consist primarily of:

General Land Office N/A Initial land entry data and maps.

Warner and Beers Proprietors
1876 Atlas of the State of Illinois. Union Atlas Company,
Chicago, Illinois (reprinted 1972 Mayhill Publications,
Knightstown, Indiana).

Wilson, James Harrison

1867 Map and Section of the Illinois River Showing Proposed Improvements in Canal and Slack Water for Connecting the Mississippi and Illinois Rivers.

Woermann, J. W, U.S. Assistant Engineer 1902- Map of the Illinois and Des Plains Rivers (from Lockport, 1904 Illinois to the Mouth of the Illinois River). Board of Engineers, United States Army.

Dustheimer, C.C., Principal Draftsman

1913 Map of Illinois and Des Plains River (from the Mouth of the
Illinois River to Lockport Illinois). U.S. Engineers Office,
Chicago, Illinois.

Tucker, Sara Jones
1942 Indian Villages of the Illinois Country, Atlas. Scientific
Papers, Vol. 1, Part 1, Illinois State Museum, Springfield,
Illinois.

Tucker, Sara Jones, and Wayne C. Temple
1975 Indian Villages of the Illinois Country, Supplement.
Scientific Papers, Vol. 1, Part 1, Illinois State Museum,
Springfield, Illinois.

- (3) Aerial photographs will be used for interpretive purposes by tracking and documenting shoreline changes caused by erosion or dredging and disposal activities, or changes in channel alignments caused by river meanders, cutoffs, channel migration, etc. Searches for more aerials are in progress.
- 1931 Aerial Photographic Survey (taken in Oct. and Nov.). These photographs were used with the Woerman Survey to made the 1913 Dustheimer Map of Illinois and Des Plains River, incomplete, but matching with pages 37 through 46 (1"-1000' B&W), Chicago, Illinois.
- 1977 Aerial photographs (taken in March). These photographs are used for habitat evaluation (1"-500' B&W).
- 1987 Aerial photographs (taken in September to October). These photographs are used for habitat evaluation. (1"-1000' mylar).
- 1989 Aerial photographs (taken in September). These photographs are used for habitat evaluation (1"-15000' color).
- (4) Employee interviews may be useful to provide additional information on a site-by-site basis.

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- Sparks, Edwin Erle
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- Reuss, Martin and Paul K. Walker
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- Tillinghast, B. F.
 - 1898 Rock Island Arsenal: In Peace and War, The Henry O. Shepard Company Printers, Chicago, Illinois.

- Tweet, Roald D.
 - 1983 History of Transportation on the Upper Mississippi and Illinois Rivers, National Waterways Study, U.S. Army Engineer Water Resources Support Center, Institute for Water Resource, Fort Belvoir, Virginia.
- 1984 A History of the Rock Island District, U.S. Army Corps of Engineers, 1866-1983, U.S. Army Engineer District Rock Island, Illinois
- Vogel, Virgil J.
 - 1963 Indian Place Names in Illinois, Illinois State Historical Society, Springfield, Illinois.
- Yeater, Mary
 - 1977 Hennepin Canal Historical District National Register of Historic Places Inventory, Illinois Department of Conservation, 29 July (typewritten).

PROPERTIES LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES FOR THE ILLINOIS WATERWAY STUDY AREA

BUREAU COUNTY

Hennepin vicinity

Hennepin Canal Historic District (Illinois and Mississippi Canal), portions in Henry and Whiteside Counties (5-22-78)

CALHOUN COUNTY

Brussels vicinity

Golden Eagle-Toppmeyer Site (6-14-79)

Kampsville vicinity

Kamp Mound Site, north of Kampsville (8-24-78)

Michael vicinity

Michael Klunk Farmstead (6-23-82)

CASS COUNTY

Beardstown

Park House, 200 W. Second St. (2-10-83)

FULTON COUNTY

Lewistown vicinity

Dickson Mounds (5-5-72)

Duncan Mills Bridge (10-29-80)

Larson Site, south of Lewistown (11-21-78)

Ogden-Fettie Site (7-31-72)

Sheets Site, west of Lewistown (12-22-78)

Liverpool vicinity

Sleeth Site (5-17-79)

Maples Mills vicinity

Tampico Mounds (5-14-79)

GREENE COUNTY

Eldred vicinity

Koster Site (6-19-72)

Hillview vicinity
Mound House Site, north of Hillview (9-1-78)

JERSEY COUNTY

Alton vicinity

Pere Marquette State Park Lodge and Cabins (3-4-85)

Chautauqua

New Piasa Chautauqua Historic District, off McAdams Parkway (6-15-82)

Grafton vicinity

Duncan Farm Site, Pere Marquette State Park, Illinois 100 (8-24-82)

Nutwood vicinity

Nutwood Site, south of Nutwood (2-9-79)

LA SALLE COUNTY

LaSalle

Hotel Kaskaskia, 217 Marquette St. (11-3-88) LaSalle City Building, 745 Second St. (8-29-85) Marseilles Hydr Plant, Commercial St. (5-9-89)

LaSalle-Peru vicinity

Starved Rock Lodge and Cabins (Illinois State Parks Lodges and Cabins TR) (5-8-85)

Ottawa

John Hossack House, 210 W. Prospect St. (3-16-72)
Washington Park Historic District, roughly bounded by
Jackson, LaSalle, LaFayette, and Columbus Streets (4-11-73)

Ottawa vicinity

Old Kaskaskia Village Site, 4 miles west of Ottawa on U.S. 6 (10-15-66)

Starved Rock, Starved Rock State Park, 6 miles west of Ottawa on Illinois 71 (10-15-66)

Utica

Spring Valley House/Sulphur Springs Hotel, Dee Bennett Rd. (11-20-87)

MASON COUNTY

Havana

Rockwell Mound, Rockwell Park (12-10-87)

Manito vicinity
Clear Lake Site, west of Manito, portions of Tazewell County
(11-28-78)

PEORIA COUNTY

Bartonville

Peoria State Hospital, Ricketts Ave. and U.S. 24 (2-17-82)

PIKE COUNTY

Griggsville vicinity
Naples Mound 8, east of Griggsville (10-14-75)

PUTNAM COUNTY

Hennepin

Edward Pulsifer House, Illinois 71 (9-4-79) Putnam County Courthouse, Fourth St. (3-4-75)

Putnam

Cortland Condit House, off Illinois 29 (9-16-83)

SCOTT COUNTY

Naples

Naples Archaeological District (12-22-79)

TAZEWELL COUNTY

Pekin

Pekin Federal Building, 334 Elizabeth St. (10-9-80) Pekin Theater, 21-29 S. Capitol St. (6-12-82)

WILL COUNTY

Channahon vicinity

Briscoe Mounds, east of Channahon (12-22-78)

Joliet vicinity

Illinois and Michigan Channahon State Park, 7 miles southwest of Joliet on U.S. 6; portions in Cook, Grundy, and LaSalle Counties (10-15-66)

Lockport

Illinois and Michigan Canal Office Building (Will County Historical Society Headquarters), 803 S. State St. (5-17-72) Lockport Historic District, between 7th, 11th, Canal, and Washington Streets (5-12-75)
Robert Milne House, 535 E. 7th St. (12-17-79)

Lockport vicinity

Fitzpatrick House, Illinois 53 (2-9-84) Stone Manor, southeast of Lockport (11-28-80)

Romeoville

Ron George Round Barn, off U.S. 66 northeast of Romeoville (12-7-82)

Old State Capitol • Springfield, Illinois 62701 • (217) 782-4836

REGIONAL ILLINOIS RIVER Illinois Waterway

IHPA LOG #90010204

27 June, 1990

Dudley M. Hanson, P.E. Chief, Planning Division ATTN: Ken Barr Rock Island District Corps of Engineers Clock Tower Building P.O.Box 2004 Rock Island, IL 61204-2004

Dear Sir:

Thank you for requesting comments from our office concerning the possible effects of the project referenced above on cultural resources. Our comments are required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties".

This letter contains a listing of the types of studies which may be required to determine impacts to significant historic properties pursuant to the National Historic Preservation Act for the Illinois Waterway project. Also included is a listing of National Register structures, sites, and districts within the Illinois Waterway. There are numerous sites that have been determined eligible for listing, but have not been listed on the National Register of Historic Places. A compilation of those eligible but not listed sites is beyond the ability of the IHPA to accomplish in a timely fashion. These records can be made available for inspection to the Corps of Engineers. Please contact Ann Haaker to arrange for record inspection.

The following studies should be considered in planning for the impact on prehistoric and historic archaeological resources.

- 1) River bank survey of the entire length of the river. Such surveys should incorporate the techniques employed by D. Esarey (1989),
- 2) Document the extant shipwrectk resources in the river, and propose methods for their field evaluation.
- 3) Evaluate the potential for deeply buried sites. This would include referencing existing geomorphological studies and conducting new ones where needed to cover the entire river valley and impacted areas of tributaries. Evaluation for buried site potential should include an outline of the methodology to be used for conducting deep testing for archaeological resources.

- 4) Plans should include an evaluation of the impact of erosion to archaeological resources, including resources that are constantly exposed to erosional forces (such as the Zimmerman site) and those that may only occasionally be effected by fluctuating water levels that are associated with maximum flood stages and periodic drawdowns and maintenance activities.
- 5) Address the effect of dredging activities on cultural resources, including the relationship of dredging to bank erosion. The quantity of dredging spoil sites could be predicted and incorporated into a resource evaluation plan.
- 6) Document the potential for historic archaeological sites in the valley. Consult available county atlases, plat maps and local historical societies for extant data on local histories. This research could provide a synthesis of the history of the river, and facilitate the development of models for survey and testing of historic archaeological resources.
- 7) Existing predictive locational models associated with the Illinois River valley should be consulted. Results and suggstions generated by these modles should be evaluated based on any new iniformation generated during the Illinios Waterway Navigation Project.
- 8) Produce a model for evaluating the significance of different types of sites. Certain site types from any given settlement-subsistence system may be found to be very numerous or extremely rare within the Illinois River valley. Understanding each site's function within the settlement-subsistence system, and knowing how those sites and systems are related to the Illinois River and floodplain will be necessary to evaluate the need for additional testing. Site significance models should be produced for all periods of occupation including Paleoindian through Historic periods.
- 9) In addition to archaeological concerns, architectural concerns should be addressed by producing photographs of all standing structures that exist in, over, and around the Illinois River valley, and submitting them to the IHPA for comment and evaluation.

Together, these activities should combine to advance the understanding of the culture history of the Illinois River valley. Furthermore, the significance of the river to the various cultural groups that have lived alongside the river for almost a dozen millenia should be addressed. Finally, the effect that the river has had on the existing archaeological database needs to be included in project plans and activities.

Please find the enclosed publication of those places in Illinois that are listed on the National Historic Register of Historic Places, and the accompanying Additions flyer. Those places that are of concern to the IHPA with regard to the Illinois Waterway project are highlighted in blue. Not all places that may be of concern are highlighted, however. The urban areas in Cook County and the cities of Peoria and Joliet were not assessed, in part due to time constraints, and in part due to a lack of knowledge of the extent of the project study area. The Corp of Engineers is encouraged to identify those places that will be located within the study area. The places marked in the enclosed copies comprise a preliminary and incomplete listing of those places that will require comment by the IHPA.

We look forward to assisting the Corps of Engineers in future endeavors associated with the Illinois Waterway Navigation System study. Feel free to contact Thomas R. Wolforth, Staff Archaeologist, 217/782-9345, concerning archaeology, and Ann Haaker 217/785-5027, concerning historic and architectural resources.

interely;

Theodore W. Hild Deputy State Historic Preservation Officer

TWH: trw

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GEOTECHNICAL
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RECONNAISSANCE REPORT FOR ILLINOIS WATERWAY NAVIGATION STUDY

APPENDIX F GEOTECHNICAL

TABLE OF CONTENTS

Subject	<u>Page</u>
SECTION 1 - THE ILLINOIS WATERWAY	F-1
SECTION 2 - O'BRIEN LOCK	F-2
Location and Physiography	F-2
Construction History	F-2
Unconsolidated Materials	F-2
Bedrock Stratigraphy	F-3
Groundwater	F-3
Mineral Resources	F-3
References	F-4
SECTION 3 - LOCKPORT LOCK	F- 5
Location and Physiography	F-5
Construction History	F- 5
Unconsolidated Materials	F-5
Bedrock Stratigraphy	F-6
Bedrock Structure	F-6
Groundwater	F-6
Mineral Resources	F-7
References	F-8
SECTION 4 - BRANDON ROAD LOCK AND DAM	F-9
Location and Physiography	F-9
Construction History	F-9
Unconsolidated Materials	F-9
Bedrock Stratigraphy	F-9
Bedrock Structure	F-10
Groundwater	F-10
Mineral Resources	F-10
References	F-11
SECTION 5 - DRESDEN ISLAND LOCK AND DAM	F-12
Location and Physiography	F-12
Construction History	F-12
Unconsolidated Materials	F-12

TABLE OF CONTENTS (Cont'd)

Subject	Page
Bedrock Stratigraphy	F-13
Bedrock Structure	F-13
Groundwater	F-13
Mineral Resources	F-14
References	F-15
SECTION 6 - MARSEILLES LOCK AND DAM	F-16
Location and Physiography	F-16
Construction History	F-16
Unconsolidated Materials	F-16
Bedrock Stratigraphy	F-16
Bedrock Structure	F-17
Groundwater	F-17
Mineral Resources	F-17
References	F-18
SECTION 7 - STARVED ROCK LOCK AND DAM	F-19
Location and Physiography	F-19
Construction History	F-19
Unconsolidated Materials	F-19
Bedrock Stratigraphy	F-19
Bedrock Structure	F-20
Groundwater .	F-20
Mineral Resources	F-20
References	F-21
SECTION 8 - PEORIA AND LA GRANGE LOCKS AND DAMS	F-22
Location and Physiography	F-22
Construction History	F-22
Unconsolidated Materials	F-22
Bedrock Stratigraphy	F-23
Bedrock Structure	F-23
Groundwater	F-23
Mineral Resources	F-24
References	F-25

RECONNAISSANCE REPORT FOR ILLINOIS WATERWAY NAVIGATION STUDY

APPENDIX F GEOTECHNICAL

SECTION 1 - THE ILLINOIS WATERWAY

The Illinois Waterway, maintained by a series of eight locks and dams on the Illinois River, extends from the Mississippi River about 38 miles above St. Louis, Missouri, to approximately Chicago, Illinois. It connects the Mississippi River-Ohio River navigation system and the Great Lakes. This channel is divided into segments and is fully canalized.

The Illinois River is best described physiographically by dividing it into two sections, the Upper River and the Lower River. The Upper River is the section that flows westerly from the start of the Illinois River at the confluence of the Des Plaines and Kankakee Rivers to the town of Hennepin at the "Great Bend" of the river. Six locks are located within this section: Dresden Island, Marseilles, Starved Rock, Lockport, O'Brien, and Brandon Road. The Lower River flows southwesterly and contains LaGrange and Peoria locks.

Except for an area at its mouth, both sections of the river and their basins were affected by the Illinois glacier. More than half of the present river basin was covered by Wisconsin Drift.

The Upper River and the Lower River differ. The Upper River has an average width of 400 feet, with banks 10 to 20 feet above normal pool elevations. Rock bluffs prevail along the river, and land elevations on the bordering uplands average 750 feet National Geodetic Vertical Datum (NGVD). The Upper River valley has numerous strip mines, quarries, and gravel pits along its edges.

The Lower River occupies a preglacial channel whose bed is about 100 feet above a rock bottom, while the Upper River rests directly on the rock surface. This part of the Lower River generally is wider than the Upper River. The widest part of the Lower River is near Grafton, Illinois, where the valley is almost 1,400 feet wide. Since the river valley is so wide here, the present volume of the river is much less than the valley capacity.

Numerous bottom land lakes, ponds, and sloughs in the Lower River have become heavily silted. Some silt comes from the Upper River, but most comes from extensive cultivation of the land in the lower valley. Because of its low velocity, the river deposits sediment in backwater areas.

SECTION 2 - O'BRIEN LOCK

LOCATION AND PHYSIOGRAPHY

The O'Brien Lock and Controlling Works is located on the Calumet River in Cook County, Illinois, about 326 miles above the mouth of the Illinois River. The project provides a link between the Inland River System and the Great Lakes Navigation System. The O'Brien Controlling Works regulates the flow of the Calumet River, a north-south flowing tributary of the Little Calumet River which is located 2,700 feet south of the works. The river has been reversed to carry water away from Lake Michigan, and the works maintains this flow and prevents backflow into the lake.

The region surrounding the site is a low plain terrain with marsh areas. It belongs to the Chicago Lake Plain area of the Great Lakes Physiographic Section. At one time, this section was inundated by Glacial Lake Chicago, which is a water body that was ponded by the Valparaiso Moraine. The water level grew as a glacial lobe retreated and melted. Some glacial moraines deposited by the last ice sheet still exist in this area.

CONSTRUCTION HISTORY

O'Brien Lock and Dam was designed by the Chicago and Buffalo Districts of the U.S. Army Corps of Engineers. It was built as part of the Calumet-Sag Navigation project, which was completed in 1960 at an approximate construction cost of \$7 million. In May 1970, bituminous patching and seal coating designs were made. The original foundation evaluation was based on a series of borings taken in 1955-1956.

UNCONSOLIDATED MATERIALS

The unconsolidated materials in the project area consist of a thin deposit of alluvium underlain by a compact glacial till. The alluvium is generally composed of clays, silts, and sands that are soft and loosely packed. Below this 5-foot layer is a deposit of glacial till. This hard, ice-laid material is described as a mixture of different-sized particles ranging from silt to boulder with pockets of higher silt and clay content. A high concentration of cobbles and boulders exists at the overburden-bedrock contact. The thickness of the total overburden has been estimated between 55 and 60 feet. During the Pleistocene epoch, the ice in the Chicago region was at least a mile thick, indicating that this till was laid down under a tremendous compressive load.

BEDROCK STRATIGRAPHY

Beneath the glacial till lies Silurian age carbonate rock. The Niagaran Dolomite was deposited in a shallow sea during the Silurian Age. Illinois was almost continuously beneath the sea during this age. The Silurian is thus characterized by the reef structures that formed. The rocks intermingled between the structures are less pure than the pure carbonate nature of the reefs. These inter-reef rocks vary from a cherty, silty dolomite to an argillaceous dolomite and from an argillaceous limestone to a calcareous shale and siltstone.

GROUNDWATER

In this area, the till provides excellent aquifer material because of the high concentration of sand and gravel. Also attributing to the character of the unconsolidated materials is the sandy nature of the lake sediments. These aquifers are considered to be at a shallow depth of 1 to 2 feet. The conditions in this area are considered to be good for aquifer development. Also in this area is a deeper aquifer in Cambrian and Ordovician bedrock strata. This permeable rock provides water for the Upper River sections.

MINERAL RESOURCES

In the area of the O'Brien Lock and Dam, extensive quarrying of sand and gravel has taken place. There are currently numerous pits in Cook County and the surrounding area. These pits are taking advantage of the sands and gravels left as lake deposits. Gravel is produced in greater quantities than sand. In localized areas, where the overburden is not too thick, stone is being quarried.

REFERENCES

- 1. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 2. Illinois State Geological Survey, H. B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 3. U.S. Army Corps of Engineers, Chicago District, Thomas J. O'Brien Lock and Controlling Works, Periodic Inspection Report No. 3, December 1978.

SECTION 3 - LOCKPORT LOCK

LOCATION AND PHYSIOGRAPHY

The Lockport Lock is located approximately 2 miles north of Joliet, Illinois. The site lies in a narrow floodplain about 1 mile in width and bordered by steep bluffs. These moderately high bluffs are composed of a dolomitic limestone that is, in turn, overlain by glacial deposits. The channel bed has been cut down to the underlying bedrock. Presently, the river covers only a fraction of the original channel. The lock lies near the northeastern border of the Mississippian Basin and the North-Central Lowland Till Plain. The location also can be described as being within the Wheaton Morainal Country of the Central Lowlands Province. The surrounding vicinity is drained by the Des Plaines River and its tributaries that combine to produce the Illinois Waterway. The topography of the site itself is mostly flat and marshy in places.

CONSTRUCTION HISTORY

The Lockport Lock was designed and built by the State of Illinois. The Federal Government received responsibility for this structure through the Rivers and Harbors Act of 1930. The project then was finished by the Government in 1933. Since its completion, repairs and rehabilitation have been done. The tops of the lock walls were resurfaced in 1966, the upper lock gates were replaced in 1966-1968, and a new electrical system was installed in 1976. Subsurface data are available in the report entitled, Reconnaissance Report for Hydropower for Lockport Lock.

UNCONSOLIDATED MATERIALS

Most of the material overlying the bedrock in this area is from glacial outwash. The continental glaciers covered most of the Chicago area in Pleistocene times. When the glaciers retreated, they left a postglacier lake and outwash deposits that spread out over Chicago and the vicinity, including the Lockport and Joliet area. The meltwaters drained into the Illinois River and deposited overburden material in the waterway and the lock area. These sands and gravels are granular in nature. More recent alluvial deposits, up to 10 feet in thickness, cover the glacial materials in some places.

BEDROCK STRATIGRAPHY

In the Lockport area, the bedrock is a Silurian dolomitic limestone. No Paleozoic rock younger than Silurian Age is present in the vicinity. This is most likely due to the fact that the resistance of the dolomite prevented extensive erosion from the glaciers. Other destructive forces, such as stream flow and abrasion, have acted on the rock, leaving it slightly altered but still fairly competent.

The Joliet Formation that comprises the bedrock can be divided into the Romeo, Markgraf, and Brandon Bridge members. The lower rock, the Brandon Bridge member, is argillaceous and contains interbedded shale seams varying from 4 to 20 feet in thickness. The middle rock, the Markgraf, is a medium bedded light gray, fine-grained cherty limestone. The upper rock is a 20- to 25-foot-thick white limestone with vugs. The contact between the bedrock and the alluvial deposits in discernible and clear because most of the weaker rock has been removed. During drilling operations, it was found that there is a thin 3- to 4-inch layer of limonitic bedrock at the interface of the Niagaran bedrock and the overburden.

BEDROCK STRUCTURE

The bedrock at the dam site is of moderate hardness and has no specific jointing pattern, but the rock does have a tendency to break along bedding planes or parallel to the planes. Several zones of shattering were noted during drilling that took place here. This shattering may be due to fault planes running through the dolomite, or perhaps it is only a readjustment of the rock to surface losses by erosion. The deeper rock that forms the foundation for the lock structure is a Niagaran dolomite. This rock is a fine- to medium-grained dolomitic limestone with stylolitic bedding planes at 1- to 3-foot intervals. The dip of this rock is only regional and minor. A pattern of northeast-southwest running joints is noticeable at times but not distinct and readily traced. There is some indication of fracturing in places at low to steep angles. Some rock sections have a vuggy appearance, and chert zones with nodules are sometimes encountered.

GROUNDWATER

Sand and gravel deposits have high potentials for groundwater storage. The glacial tills in this area provide good aquifers, as do the tills in the immediate Chicago area. Because of the granular and sandy nature of the alluvial deposits in the lock vicinity, they are also good aquifers. Additional information concerning groundwater is available.

MINERAL RESOURCES

The same sand and gravel deposits that often yield localized aquifers also provide excellent sources of construction gravel. Companies in the Chicago and Joliet area take advantage of this by starting and using numerous gravel pits. In addition to gravel, stone also is produced around the Joliet area. The Silurian dolomite that underlies the extensive gravel terraces is quarried here.

REFERENCES

- 1. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 2. Illinois State Geological Survey, H.B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 3. U.S. Army Corps of Engineers, Chicago District, Design Memorandum No. 1, Duplicate Locks, Illinois Waterway, Illinois and Indiana, February 1971.
- 4. U.S. Army Corps of Engineers, Chicago District, Reconnaissance Report, Major Rehabilitation, Illinois Waterway, Lockport Lock and Appurtenant Structures, July 1977.
- 5. U.S. Army Corps of Engineers, Chicago District, Appendix A, Soils and Geology for Structural Stability Analysis, Lockport Lock, Illinois Waterway, September 1972 (revised December 1972).

SECTION 4 - BRANDON ROAD LOCK AND DAM

LOCATION AND PHYSIOGRAPHY

The Brandon Road Lock and Dam is located just south of the city of Joliet in Rockdale, Will County, Illinois, at River Mile (RM) 286 of the Illinois Waterway. This location is also the junction of the Des Plaines River and the Illinois and Michigan Canal. The location is in the Wheaton Morainal Country of the Central Lowlands Province.

CONSTRUCTION HISTORY

This complex was designed by the State of Illinois and built by the State and Federal Government. In 1930, the Federal Government was authorized to assume full responsibility for the completion and maintenance of the structure. By 1933, the project was completed. Since then, the original structure has been rehabilitated. The upstream faces of the tainter gate piers were repaired in 1958, and floating mooring bits were installed in 1965. Other repairs took place in 1966, 1967, 1969, 1972, and 1975. In 1980, a dam stabilization took place.

Numerous borings have been taken on site. A list of these borings is available, as well as detailed logs of most borings. Various projects initiated these borings for the purpose of gaining geologic foundation information.

UNCONSOLIDATED MATERIALS

Auger borings done on the site location show a 25- to 27-foot layer of fat green clay with interbedded sand and gravel. Sediments in the area were found to be contaminated with petrochemicals. Auger refusal was at elevation 507 NGVD, indicating a layer of broken rock above bedrock. This weathered zone was found to be 2 to 7 feet thick. Bedrock elevation is approximately 502 feet NGVD.

BEDROCK STRATIGRAPHY

The bedrock in the area is the Brandon Bridge Member of the Joliet Formation. This strata is considered part of the Niagaran Series of Silurian age. The rock is fine-grained, light gray dolomite. The upper part contains bedding partings that are filled with a blue-green clay which gives the rock a blue-green tint. In the lower parts of the strata, these

partings are filled with a dark gray shale. The rock becomes more shaley with depth, and the partings become less distinctive. Many chert nodules and bands begin to occur throughout the rock below elevation 490 feet NGVD.

BEDROCK STRUCTURE

The bedrock is considered to be massive. The main structural features are the bedding planes partings that are filled with clay or shale. If any shear failure of this rock were to occur, it would be along these structures, yet they are not considered to be continuous throughout the strata. The bedding of this dolomite is assumed to be horizontal. The bedding surfaces are stylolitic in nature, which means that the surfaces are not planar but irregular with a difference of as much as 1 inch between the valleys and peaks. The interlocking habit of these planes tends to produce a sturdy rock. The bedrock in this area is in the same series as the rock that forms the rim of Niagara Falls in New York.

GROUNDWATER

Brandon Road Lock and Dam is in the Wheaton Morainal Plain, which is the result of the advancement of glaciers during the Pleistocene Epoch. Glacial activity from the north left spotty deposits of sand and gravel, as well as clastic debris from bedrock. These deposits are extremely sporadic, but once they are found, they yield large amounts of groundwater. More information concerning groundwater is available upon request.

MINERAL RESOURCES

In the area of Brandon Road Lock and Dam, sand and gravel, as well as stone is produced. The sand and gravel is used in the production of portland cement concrete and in bituminous concrete. A good portion of what is quarried each year is used on secondary roads. A dolomitic stone is quarried in the area surrounding Joliet.

REFERENCES

- 1. Illinois State Geological Survey, H.B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 2. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 3. U.S. Army Corps of Engineers, Rock Island District, Illinois Waterway, Brandon Road Lock and Dam, Major Rehabilitation, Design Memorandum No. 1, General Design Memorandum, April 1983.
- 4. U.S. Army Corps of Engineers, Rock Island District, Final Feasibility Report for Hydropower, Brandon Road Lock and Dam, Illinois Waterway, Technical Appendices, January 1982.

SECTION 5 - DRESDEN ISLAND LOCK AND DAM

LOCATION AND PHYSIOGRAPHY

The Dresden Island Lock and Dam is immediately downstream of the confluence of the Des Plaines and Kankakee Rivers at Illinois RM 271.5 near Morris, Illinois. The lock and dam is in the Upper Section of the Illinois River. Characteristically, the river valley in this area is narrow with steep bluffs on the northern banks. In the vicinity of Dresden Island, the Kankakee Bluff rises nearly 95 feet from the pool level to an elevation of 600 feet. The southern bank, however, is flat and mostly utilized for agricultural purposes.

CONSTRUCTION HISTORY

Responsibility for the Dresden Island structure was taken over by the Federal Government in 1930. The Rivers and Harbors Act authorized the Government to maintain and operate the Illinois Waterway. The lock and dam was finished in 1933 at a cost of \$4 million, with over one-half of the money coming from the Federal Government. Since completion of the structure, the Government has made improvements and repairs, such as reconstructing the lower guard wall in 1953. In 1977, the arch dam was rehabilitated and four mooring cells were constructed. A number of borings have been drilled at Dresden Island since the original foundation explorations in 1921. (See references 3 and 4 for more information concerning foundation exploration.)

UNCONSOLIDATED MATERIALS

The unconsolidated materials in this area are mostly silty and clayey topsoils ranging from 1 to 6 feet in depth. Most of the alluvial soils were deposited in the Wisconsin glacial period. The loess varies in depth because of the effects of wind and water acting upon the deposits. This soil is very fertile and is used widely for agricultural purposes. The majority of the surrounding land, especially on the southern bank, is covered by swamp grass and weeds. These areas of poor drainage have accumulations of up to 32 inches of organic topsoil. A 2- to 8-foot layer of residual sand and clay, produced from bedrock weathering, adds to the topsoil accumulation.

BEDROCK STRATIGRAPHY

Resting below the topsoil layers is the Pottsville sandstone that was deposited by a shallow Pennsylvanian sea. This unit varies in thickness (up to 15 feet thick) and appearance. In the vicinity, Pennsylvanian age rocks tend to exist in patches because the LaSalle Anticline causes the strata to thin out eastward. Because of its intermittent appearance in the area, this rock was not encountered in drill holes for the Dresden structure. In general, the bedrock at the site is Ordovician sedimentary deposits of limestone and shale on which the Pottsville lies unconformably. The Divine limestone member of the Maquoketa Formation makes up the upper strata. This limestone is approximately 30 feet thick. Below this member is the Maquoketa shale which is a dense, gray calcareous shale. The contact between the two is a soft plastic, green clay-shale ranging in thicknesses of 6 inches to 2 feet. It should be noted that the upper 1 to 3 feet of the Maquoketa limestone is weathered and fractured due to ground water solution, but this light gray unit is generally dense and crystalline.

BEDROCK STRUCTURE

It should be noted that Dresden Island Lock and Dam is in the area of the Sandwich Fault Zone. The structure is 6 miles northeast of Dresden. This fault zone, which is characterized by high angle normal faults, is about 85 miles long and runs northwest-southeast from Will County to near Oregon in Ogle County. The age of the faulting is middle Silurian to pre-Pleistocene. The maximum displacement of the fault zone is 800 feet at its center in DeKalb County. The zone is of minor importance and is not considered seismically active. No evidence of faulting was found in any of the cores from the dam site.

GROUNDWATER

Supplies of groundwater occur in some bedrock formations in the Dresden Island area. The Silurian dolomite formations are important sources of groundwater. The principle exposures of this strata are on the southeast side of the Des Plaines Valley near Millsdale and on the northwest side of the valley at Channahon. Additional data concerning groundwater are available.

MINERAL RESOURCES

Fort Atkinson Limestone is quarried in the Dresden Island area. Near Joliet, a Silurian dolomite also is quarried. Clays and coal are two other resources in the area. Just south of the site, the Spoon Coal Formation has been worked. A coarse gravel is also produced in the area near Morris.

REFERENCES

- 1. Illinois State Geological Survey, H.B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 2. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 3. U.S. Army Corps of Engineers, Chicago District, Duplicate Locks GDM Phase I: A Plan for Modernization of the Illinois Waterway, Volume 2 of 5, Appendices D, E, and F, April 1975.
- 4. U.S. Army Corps of Engineers, Chicago District, Appendix A: Soils and Geology for Structural Stability Analysis, Dresden Island Lock and Dam, Illinois Waterway, June 1973.

SECTION 6 - MARSEILLES LOCK AND DAM

LOCATION AND PHYSIOGRAPHY

The Marseilles Lock and Dam is located in LaSalle County, Illinois, in the city of Marseilles. The structure falls within RM 244 and 247, with the lock situated 2.5 miles downstream from the dam. The setting of the lock and dam complex is a broad glacial floodplain. This bottom land is the result of glacial outwash that scoured the valley. The current river plain only occupies a small portion of the larger plain that is almost 2 miles wide. The average elevation around the lock and dam is 500 feet. Along the north and south edges of the valley, elevations rise to 675 feet and level out into a till plain topography. The complex is located in the Till Plains Section of the Central Lowlands Province.

CONSTRUCTION HISTORY

The State of Illinois designed Marseilles Lock and Dam and built it in cooperation with the Federal Government. The project was completed in 1933. This canal section was needed due to the rapids at this location of the waterway. Since then, the Government has made several repair and reconstructive efforts. Part of the approach wall was reconstructed in 1941, the tops of the lock walls were resurfaced in 1965, and new operating machinery was installed in 1969. Any boring or exploration data are available upon request.

UNCONSOLIDATED MATERIALS

The youngest glacial deposits in the area are of Wisconsinian Age. These deposits lie immediately beneath the topsoils, except where deeper valleys have cut through the soils profile, such as the Illinois River Valley. In this situation, alluvial sediments have completely destroyed glacial evidence. Borings on location show a heterogeneous mixture of silts and sandy clays with varying ratios of gravel, cobbles, and rock fragments making up the alluvial material.

BEDROCK STRATIGRAPHY

Most of the bedrock in the area is overlain by glacial and alluvial material. The bedrock underlying this material is of the Carbondale Formation. This rock is a Pennsylvanian age shale with some sand interbedded. At the top of this bed is a zone of clay that is the product of the weathering of

the underlying shale. Within the bedrock, there are thin coal beds that are characteristic of the Pennsylvanian bedrock in Illinois. These are considered to be cyclothemic beds, for they show a definite pattern of lithologic transgressions and regressions. The shale ranges from medium gray to dark gray in color and is often sandy in texture. Pyrite crystals, as well as gypsum are often found within the weathered zones where oxidation has occurred.

BEDROCK STRUCTURE

The Marseilles Lock and Dam complex lies within the LaSalle Anticlinal Belt. The beds dip slightly to the southwest into the Illinois Basin structure that makes up most of the state. The beds are generally flat with some local faults and flexures cutting the coal seams.

GROUNDWATER

The St. Peter Sandstone, which occurs at the surface in localized spots, is an important source of groundwater. This sandstone is loosely packed and therefore has high permeability. Strata of this nature easily can pick up any impurities, causing the water moving through it to be contaminated.

MINERAL RESOURCES

In the Marseilles area, the most important resource, besides groundwater, is silica sand. This sand is used in the production of glass and is used as a grinding and polishing sand. The St. Peter Sandstone is the major source of silica sand in the county. Gravel, stone, coal, and clay are also notable resources of LaSalle County.

REFERENCES

- 1. Illinois State Geological Survey, H.B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 2. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 3. U.S. Army Corps of Engineers, Chicago District, Appendix A: Soils and Geology for Structural Stability Analysis, Marseilles Lock and Dam, Illinois Waterway, July 1973.
- 4. U.S. Army Corps of Engineers, Chicago District, Illinois Waterway, Illinois, Marseilles Lock and Dam, Periodic Inspection, Report No. 2, October 1973.
- 5. U.S. Army Corps of Engineers, Chicago District, Duplicate Locks GDM Phase I: A Plan for Modernization of the Illinois Waterway, Volume 2 of 5, Appendices D, E, and F, April 1975.

SECTION 7 - STARVED ROCK LOCK AND DAM

LOCATION AND PHYSIOGRAPHY

The Starved Rock Lock and Dam site is located near Illinois RM 231, near the towns of Ottawa and Utica, Illinois. Starved Rock State Park lies just opposite the structure. The complex lies within the Bloomington Ridge Plain of the Central Lowlands Province.

CONSTRUCTION HISTORY

The Starved Rock Lock and Dam was designed and constructed by the State of Illinois Department of Public Works and Buildings, Division of Waterways, in the early 1920's. The Federal Government, by the authority of the Rivers and Harbors Act of July 3, 1930, assumed responsibility for completion and improvement of the project in 1933. Since its completion, numerous rehabilitations have been done. From 1954 to 1957, the upper guide wall was reconstructed. In 1962, the tops of the lock walls were resurfaced. In 1978, the vertical surfaces of these walls also were resurfaced. Other minor projects were performed, such as installation of a miter gate and floating mooring bit recesses, numerous damage repairs, and rehabilitation of machinery and electrical works.

In 1921, the State took 36 borings. The logs of these borings are lacking in detail, but the general information agrees with borings taken in 1971 by the Corps. In 1980, eight borings were taken to determine geologic foundation condition. Layout and detailed logs of these borings are available upon request.

UNCONSOLIDATED MATERIALS

A layer of variable thickness sediment is present at the surface of the site. The sediment consists of interbedded clays and sands. The clay is a gray fat to lean clay with discontinuous layers and stringers of sand. The downstream area, in particular, is lacking these sediments.

BEDROCK STRATIGRAPHY

The bedrock at this locality is the St. Peter Sandstone and the Shakopee Dolomite. Both of these formations are Ordovician in age. The St. Peter Formation is represented by two members, the Tonti and the Kress Sandstones. The Tonti is a medium- to fine-grained, well-sorted sandstone.

This rock is friable and non-calcareous and lies comformably on the Kress member. The Kress is a conglomerate consisting of angular chert in a matrix of shale, clay, and sometimes sand. This layer is a weathering zone resulting from the solution of the underlying dolomite.

The Shakopee Formation is a thin- to medium-bedded, fine-grained dolomite that is light brown to light gray. Lenses of sand and shale seams are common throughout this layer. Algal beds occur as lenticular masses of dark gray, medium-grained dolomite up to a foot thick. Several beds are breccias. The contact between the St. Peter and Shakopee is an unconformity. After the dolomite was deposited, there was an interval of erosion and no deposition before the sandstone was deposited. This was when the Kress member was formed.

BEDROCK STRUCTURE

The Sandwich Fault Zone is the nearest major regional structure. However, exploration on site shows no evidence of faulting in conjunction with the fault zone, although small displacement faulting and slickenslides are common. A maximum displacement of 1.5 feet was found in borings. Slickenslides are found along shale seams.

GROUNDWATER

The St. Peter Sandstone is a major source of groundwater in Illinois. Its high permeability allows for groundwater movement and storage. Where the formation occurs at the surface, large amounts of water are yielded.

MINERAL RESOURCES

Great quantities of silica sand are produced in LaSalle County. The source of the sand is the St. Peter. The sand is excellent for use in glass production because it is free of clay, heavy minerals, and impurities. This rock is screened, washed, and then used for various purposes such as an abrasive and for filtration.

REFERENCES

- 1. Illinois State Geological Survey, H.B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 2. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 3. U.S. Army Corps of Engineers, Rock Island District, Feasibility Report for Hydropower, Starved Rock Lock and Dam, Illinois Waterway, Technical Appendices Volume II of II, December 1982 (revised June 1983).
- 4. U.S. Army Corps of Engineers, Chicago District, Duplicate Locks GDM Phase I: A Plan for Modernization of the Illinois Waterway, Volume 2 of 5, Appendices D, E, and F, April 1975.

SECTION 8 - PEORIA AND LA GRANGE LOCKS AND DAMS

LOCATION AND PHYSIOGRAPHY

The Peoria Lock and Dam is located 157.7 miles above the mouth of the Illinois River, a few miles downstream from the city of Peoria, Illinois. This structure lies within RM 157.

The LaGrange Lock and Dam is located 80.2 miles above the mouth of the Illinois River. The site is approximately 8 miles downstream from the city of Beardstown, Illinois, within RM 80. Because of the close proximity of these two structures, they are discussed jointly.

The sites are located along the junction of the Springfield Plain and Galesburg Plain sections of the Central Lowlands Province. In fact, this stretch of river actually forms the boundary between the two sections, with the Springfield Plain lying to the southeast and the Galesburg Plain to the northwest. The Peoria and LaGrange Locks and Dams comprise the Lower River Section of the Illinois River. Characteristically, the channel in this area is preglacial and wide, almost 1,400 feet at its widest point. Because of the channel's enormous width, the present volume of the river is substantially less than the full capacity of the channel. Terracing is common along the shores of the waterway.

CONSTRUCTION HISTORY

The Peoria Lock and Dam, completed in 1939, was designed and built by the Federal Government as part of a modernization project. The LaGrange Lock and Dam also was designed and built by the Federal Government as part of the same project to replace outdated structures along the river. It was completed in 1939 at a cost of \$2 million. Any foundation data can be provided upon request.

UNCONSOLIDATED MATERIALS

The Illinois River Valley originated late in the Pleistocene Age, yet it was subsequently filled in with almost 100 feet of alluvial materials. These alluvial sediments include gravels, sands, silts, and clays. The present Illinois River Valley floodplain ranges from about 500 to 435 feet above sea level. Most of the present floodplain is filled by recent alluvial deposits. These deposits are up to 60 feet thick at the project sites.

BEDROCK STRATIGRAPHY

The bedrock in the Peoria and LaGrange areas is mostly Pennsylvanian in age, although Mississippian bedrock occurs in some outcrops, particularly in the LaGrange area. These beds are considered cyclothemic, which means that during the time these beds were deposited, an inland sea covered the area. There were episodes of transgression and regression of the seashore. This phenomena produces alternating beds of limestone, shales and sandstones, and thin beds of coal. If all the recent alluvial deposits were stripped off the top of the bedrock, the surface would be an undulatory plain that is cut by streams and tributaries. The Illinois River Valley is a major cut in the bedrock surface. Coal borings in the area have revealed that there is almost 300 feet of Pennsylvanian age rock present in the area.

In the Peoria area, the Carbondale and Modesto Formations make up the bedrock. These are beds of Pennsylvanian limestones and siltstones. Further downstream, in the area of Beardstown, the Valmeyeran Formation forms the bedrock. This formation consists mostly of Mississippian limestones and shales.

BEDROCK STRUCTURE

The Pennsylvanian strata lies directly beneath the glacial drift. The thickness of the system varies from 130 feet to 525 feet, with the same variation in relief in the bedrock structure as the result of glacial action. The present topographic surface closely parallels the bedrock surface. Bedrock generally dips southeasterly at a rate of 15 feet per mile in the Peoria area. The Pennsylvanian bedrock progressively overlaps older formations in a northwesterly direction, which has the same regional structure with less dip. The structure of the bedrock at LaGrange is mostly indeterminate.

GROUNDWATER

In the uplands of Peoria, the sand and gravel deposits that are buried by till yield mediocre supplies of groundwater. The Pennsylvanian rock is less permeable and thus contains few water-yielding beds. In fact, where they are exposed in places along the waterway, they protect the underlying beds from pollution.

Major sources of bedrock are found in the Beardstown area in the Sankoty Sand. Large supplies of water occur in the terrace sand and gravel deposits. Also in the area, the older St. Louis Limestone of Silurian age provides an important source of groundwater.

MINERAL RESOURCES

Major terraces of sand and gravel in this area yield large quantities of gravel. In the past, coal and peat had been mined in the counties surrounding the dam sites. The Colchester Coal has been mined, as well as the Danville and other coal formations.

REFERENCES

- 1. Illinois State Geological Survey, H.B. Willman, Geology Along the Illinois Waterway A Basis for Environmental Planning, Circular 478, 1973.
- 2. Illinois State Geological Survey, Handbook of Illinois Stratigraphy, Bulletin 95, 1975.
- 3. U.S. Army Corps of Engineers, Chicago District, Illinois Waterway, Illinois, LaGrange Lock and Dam, Periodic Inspection Report No. 2, January 1974.
- 4. U.S. Army Corps of Engineers, Illinois Waterway, Peoria and LaGrange Locks and Dams, Major Rehabilitation, Design Memorandum No. 1, Feature Design Memorandum, February 1987.
- 5. U.S. Army Corps of Engineers, Rock Island District, Illinois Waterway, Illinois, LaGrange Lock and Dam, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures, Inspection Brochure.
- 6. U.S. Army Corps of Engineers, Rock Island District, Illinois Waterway, Illinois, Peoria Lock and Dam, Reconnaissance Report, Major Rehabilitation, March 1984.

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PUBLIC INVOLVEMENT
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RECONNAISSANCE REPORT FOR ILLINOIS WATERWAY NAVIGATION STUDY

APPENDIX G PUBLIC INVOLVEMENT

Public involvement efforts for the Illinois Waterway Navigation Reconnaissance Study required development of a comprehensive mailing list representing all interested public, private, and individual interests in the waterway. The mailing list includes nearly 1,100 agencies, interest groups, and individuals representing Federal, State, regional, county, local, public, and private interests. Distribution of public coordination documents is made to all parties included in the mailing list. The mailing list is updated periodically to include new public interests as they are known.

Public coordination for the reconnaissance study began with the distribution of a Public Notice on February 24, 1989. The notice announced that navigation reconnaissance studies for the Illinois Waterway and Upper Mississippi River would be undertaken by the Corps of Engineers in Fiscal Year 1990. The notice, which is included in this appendix, also solicited public comments.

A Plan of Study (POS) was distributed on August 7, 1989. The POS summarized the objectives of the navigation studies for the Illinois Waterway and Upper Mississippi River. The POS also explained the Corps of Engineers' planning process, the history of navigation on the two waterways, existing riverine resources, and navigation trends and forecasts.

A Notice of Initiation was distributed on December 26, 1989. The notice described the study authorization and scope, delineated the study goals and tasks, summarized the study schedule, and requested public views and comments. A copy of this notice is included in this appendix.

The Notice of Initiation and press releases announced an informational meeting which was held during the afternoon of Wednesday, January 31, 1990, in Peoria, Illinois. The purpose of the meeting was to establish and maintain communications between the Corps of Engineers, Federal and State agencies, and interested groups and individuals. The meeting also served as a forum for the exchange of ideas, concerns, and comments regarding the Illinois Waterway Navigation Reconnaissance Study.

The January 31, 1990, meeting was attended by approximately 60 persons. Representatives from the Rock Island District explained the study authorization and detailed the need for the study, including assessment of economic, environmental, and engineering considerations. Attendees were encouraged to make statements, express their opinions, and interact with the Corps of Engineers' representatives and other attendees by the use of

an informal meeting format. Several attendees presented copies of their statements for inclusion in the public record. A certified court stenographer prepared a transcript of the meeting, which is on file at the Corps of Engineers, Rock Island District.

A brief summary of the January 31, 1990, public meeting was distributed to approximately 80 interested parties who: (a) attended the meeting; (b) responded to the Notice of Initiation; (c) specifically requested a summary of the meeting; or (d) with whom the Corps of Engineers is mandated to coordinate by Federal or State legislation. The summary, which is included in this appendix, presented general information about the meeting and outlined the remainder of the study schedule.

Additional contact and coordination with the public included public speaking engagements and meetings with interest groups and agencies, multi-media news releases, telephone conversations, and correspondence.

Public involvement measures for the navigation study have generated significant response. As of July 1, 1990, the Rock Island District, Corps of Engineers, had received more than 100 letters or phone calls referencing the Illinois Waterway Navigation Reconnaissance Study. Pertinent correspondence with Federal and State agencies, as required by Federal legislation, is included in Appendix H. A copy of the U.S. Fish and Wildlife Service's Planning Aid Letter is provided in appendix B.

All public input and comments were systematically handled using a modification of the Codinvolve content analysis method. This technique, which was initially developed by the U.S. Department of the Interior, ensures consistent, objective, and thorough coding, summarizing, and storing of all public input. A summary of public input, including comments recorded in the public meeting transcript, is provided in this appendix.

In general, comments received indicate a high level of support for the reconnaissance study and a need to identify measures to reduce congestion and delays on the waterway. Other comments address growing environmental concerns relative to navigation impacts to fish and wildlife habitat and cultural resources. Additional comments discuss the need to consider the relationship between recreational boating and commercial navigation.

Future public coordination efforts will include distribution of a Reconnaissance Study Update in August or September 1990. The update will summarize study progress, delineate the study schedule, and explain the planning process for the remainder of the reconnaissance study and any future feasibility studies. Finally, a Notice of Completion will be distributed at the conclusion of the reconnaissance study. The notice, issued by the Commander of the Corps of Engineers North Central Division, will summarize the reconnaissance study findings, conclusions, and recommendations, and will inform the public how to request a copy of the Final Illinois Waterway Navigation Reconnaissance Study Report.

COMMENTS/QUESTIONS/STATEMENTS

SUPPORT STUDIES

- 1. Study is needed.
- 2. Support studies.
- 3. Expedite studies.
- 4. Support system-wide approach/individual analysis of Illinois Waterway and Mississippi River.

INFORMATION/HELP

- Coordinate with and inform public/agencies of pending studies and results.
- 2. Explain the Corps' three-point management approach.
- 3. Agencies/public will work/coordinate with Corps.
- Request copy of plan of study, report, minutes, or related navigation study document(s), put on mailing list, and correct address.
- 5. What is status of plan of study?
- 6. A listing of Illinois Natural History Survey publications is available.
- 7. U.S. Department of Agriculture interested in study uses and evaluation of Performance Monitoring System (PMS) data.
- 8. Illinois State Water Survey has information/research on Illinois Waterway hydrology, hydraulics, sedimentation, physical effects of navigation, and navigation.
- 9. Public/agencies would welcome Corps assistance in preserving Illinois Waterway habitat and recreation.
- 10. Hold public meetings as soon as possible.
- 11. Coordinate with State Department of Transportation directly, rather than through Upper Mississippi River Basin Association.

- 12. Address coordination requirements and method(s) to be used to accomplish coordination.
- 13. Local communities and leaders exemplify concern and dedication to Illinois Waterway through organizations (e.g., Illinois River Coalition).
- 14. Involve/educate public regarding project and Illinois Waterway historical and use background. Improve public understanding of waterways, especially in relation to environmental and conservation concerns.
- 15. Corps does not use suggestions and comments offered by the public.
- 16. Report on Upper Mississippi River and Illinois Waterway Navigation Systems in 1989 provides valuable information to public and waterway users.
- 17. Does Corps want statements from citizens? Problems?
- 18. Does Corps speak to individual lockmasters regarding problems, other people in the field? operators?
- 19. Commend the Corps for its early coordination.
- Corps should use its knowledge and resources and take a leadership role in coordinating local resources.
- 21. A direct answer from the Corps is negligible.

GENERAL COMMENTS

- 1. No comments.
- Reconnaissance study should interrelate with issues/activities/projects along Illinois Waterway, especially near Peoria Lake area.
- 3. How will these studies be better than those from the 1970's Master Plan (Berger Study)?
- 4. Address coordination and planning process requirements and methods.
- Address the study schedule.
- 6. Will the Districts' plans incorporate the system-wide approach for the entire study? Use system-wide approach for reconnaissance studies study the Upper Mississippi River System as a whole; do not separate the Illinois Waterway and Upper Mississippi River.

- 7. There are 138 terminals located on the Illinois River System.
- 8. Interested in further economic developments along the northern segment of the Illinois Waterway.
- 9. PMS offers timely information concerning inland waterway traffic.
- 10. Illinois Waterway most studied river in the world! Illinois Waterway is a very complex system and a unique resource and life force: fish and wildlife, water supply, industrial needs, waste dilution, and commercial shipping.
- 11. Use pertinent data from previous/current river study reports and plans to provide a comprehensive reconnaissance study.
- 12. Illinois Waterway reconnaissance report will not be beneficial unless action is taken to implement necessary management strategies.
- 13. Optimistic that Reconnaissance Study (Illinois Waterway) will provide useful information for the long-term management of the Illinois Waterway and Peoria Lakes.
- 14. Local plans will be accomplished with the concentration of local effort, funds, and leadership.
- 15. Object to Corps endorsement of the Heartland Water Resources Council (HWRC) as a River Conservancy; HWRC would be an unnecessary taxing government agency in the Peoria area. Peoria area citizens paid nearly \$275 million in taxes during the past 10 years. Why would the Corps support the formation of an agency that does nothing but gather ideas and plans from Federal and State agencies? Can't the Corps work in accord with existing State and local organizations in the Peoria area (rather than promoting HWRC)? Corps says it wants to be sensitive to the public; if this is so, Corps should review and consider the taxpayer.
- 16. Existing organizations are working to beautify waterfront property for public enjoyment, contain silt, and enhance the environment in the Peoria area.
- 17. Increased leakage of new river gates has reduced water available to Marseilles Land and Water Company; by closing the raceway gate the company is making up for part of the increased leakage.
- Emphasize the use of alternative fuels.
- 19. Oppose the diversion of Lake Michigan.
- 20. Who would undertake the proposed studies?

- 21. Question of balancing transportation modes is missing from analysis: rail vs. highway vs. river transportation. Is the Corps the best judge of investments by transportation mode?
- 22. Provide greater detail in reconnaissance reports about methods and assumptions discussed in 1988 *Inland Waterway Review* article. Address differences between current and past projections/forecasts.
- 23. Is the Corps considering building any "sea walls" (near Havana, Illinois)? City of Havana, Illinois, interested in "sea walls." Any help Corps can give city of Havana, Illinois, in the way of river improvements would be appreciated.
- 24. Saving the Illinois River and Peoria Lake is the key to the future for the Peoria area.
- 25. The HWRC wants to establish an Illinois River Basin Commission to coordinate planning and implementation of management programs for the Illinois Waterway.
- 26. At the October 1989 Conference on the Management of the Illinois River System, Colonel Brown stated that the Corps' interests are environmental management, commercial navigation, and recreation.
- 27. Peoria Park District is the guardian and proponent of the aesthetic, cultural, and recreational values and pursuits of Peoria citizens. It is acquiring riverfront property to preserve floodplain access, maintain the floodway, and maintain public access to the Illinois Waterway.
- 28. Recreational use, environmental responsibility, and safe use by commercial freight should be the Corps' objectives in the Illinois Waterway; legislation at the Federal level is needed if these are not within the Corps' current mission. Navigation, ecological, and recreational facets of the waterway should be properly represented in studies.
- 29. Corps broke commitments to drainage districts when building navigation and flood control structures in 1961 and before.
- 30. Will lobby for support and completion of Muscatine Island project.
- 31. Bureaucracy has overburdened itself with paperwork, resulting in inefficiency.
- 32. Nearly all drainage districts are members of UMRFCA.
- 33. What is status of ongoing Illinois Waterway navigation study?
- 34. Tri-County Regional Planning Commission is coordinating with Illinois Department of Transportation about developing a fleeting study for the

tri-county segment of the Illinois Waterway. Perhaps this study could be expanded to cover the entire Illinois Waterway.

Illinois Department of Transportation and Tri-County study of Illinois Waterway could be expanded to cover entire waterway.

- 35. Include Peoria Lakes as part of study.
- 36. Encouraged to see State and Federal agencies working together to resolve Illinois Waterway problems.
- 37. How would Corps conduct study to address problems identified by public?
- 38. People in Minnesota have same concerns as those near Peoria.
- Plan of study adequately addresses navigation and environmental concerns.
- 40. Corps should join with efforts of HWRC to effectively manage the Illinois Waterway and Peoria Lake.
- 41. How will system-wide economic analysis be completed?

MONEY AND FUNDING

- 1. How will projects be financed? Will Inland Waterway Trust Fund be impacted?
- 2. Address how capital investment recommendations will be formulated for three districts.
- 3. What is the status of FY 90 funding?
- 4. The FY 90 Energy and Water Development Appropriations Act contains funds for navigation studies on the Upper Mississippi and Illinois Waterways.
- 5. Corps should be funded for recreation projects, since the economic benefits make the studies and project worth the costs.
- 6. What is the \$200,000 for navigation study on Illinois Waterway in FY 90 appropriations about?
- 7. State of Illinois' role in studies likely to be minor, since 100 percent Federal funding for studies.

NAVIGATION CONCERNS AND COMMENTS

- 1. Maintain and upgrade locks and dams. Maintain viability and reliability of navigation system.
- 2. Future increases in river traffic will necessitate more terminals and fleeting areas on Illinois Waterway.
- 3. Study should incorporate nonstructural and low-cost structural measures to improve efficiency and increase capacity.
- 4. Improve Illinois Waterway navigation system. The present river system will be inadequate by 1995. The structural modernization of both the Upper Mississippi and Illinois Waterways has been neglected. Seven of the eight locks on the Illinois Waterway are 50 years old or older, constructed when tonnage on the waterways was far less than today. The Corps should set its priority on enhancing lock transit, particularly since Illinois Waterway locks are at least 50 years old, and barge traffic is projected to increase. The locks need improvement, particularly those which perform the greatest number of lockages. Make the locking process more efficient. Use auxiliary locks more. Lengthen guide walls. Future locks on the Illinois Waterway should take a 15-barge tow in one pass. Eliminate double lockages. Make larger lock replacements to allow several tows at one time to transit. Make structured improvements to lock approach areas. Provide year-round commercial navigation facilities.
- 5. Corps is responsible for a channel for all river traffic.
- 6. Illinois Waterway facilities will require more repair-related downtime as they reach the end of their useful lives (50 years).
- 7. Solve approach and other traffic improvements before undertaking major improvements. Priority should be given to those structures on the system which may create bottlenecks on the river.
- 8. How will Illinois Waterway delays be handled? Delays have increased considerably. Congestion is a major factor. Delays and stoppages are inconvenient and increase costs for consumers.
- 9. Concerned about increasingly prohibitive restrictions placed on (commercial) dock sites.
- 10. The number and placement of floating timberheads at Lockport inappropriate causing problems for a downbound setover, or for those tows with a notch, or two tows locking through together. Lack of appropriate timberheads at the lock slows lock times. There should be at least four (one additional) floating timberheads on each side of the lock chamber and there should be a floating timberhead on the river wall at Lockport.

- 11. Widen the channel above the locks at Lockport to 250 feet or more it is not wide enough for two, 3-barge-wide tows to meet, forcing the waiting boat to go about a mile upstream and slowing the time for lockages.
- 12. Concerned that Corps will require more frequent or permanent closing of the three Marseilles Dam raceway gates to help maintain the upper pool.
- 13. The mix of congestion-causing factors on the Illinois Waterway from below Brandon Road Lock north has contributed to long-term stagnation of traffic growth. Total barge operational costs for systems/subsystems like Illinois Waterway from Brandon Road north cause a flattening of use over time.
- 14. Practical capacity on the Illinois Waterway from Brandon Road lock north was reached in the early 1970's.
- 15. Develop a model of the Illinois Waterway reach below Brandon Road to above Lockport to Lamont to assess problems and solutions and identify the least costly alternatives for improvements.
- 16. Capacity and congestion are only two factors in the overall decision process to be used to access need for improvements.
- 17. Obsolescence of structures nationwide contributes to higher transportation costs through slower transit times and higher incidence of downtime due to more frequent maintenance and rehabilitation.
- 18. Do not increase barge traffic over current levels. Do not increase barge speed. Improvements should not be made over and above what is deemed necessary to keep traffic at current levels. Current channel depths should be maintained (and not deepened). Do not increase lock capacity.
- 19. Urge Corps to estimate rehabilitation and capacity needs for the next 50 years, given the lead time required for construction and rehabilitation to begin.
- 20. Is scheduling (lockages) an issue?
- 21. The following comments pertain to Dresden Island: The lower cells are used by tows clearing the bridge in order to set them up for exchange once a downbound tow clears the lock. The nearby railroad bridge hampers traffic. When a downbound double has moved to couple its first half, the chamber entrance is effectively blocked. The bye time is lost time for use of the chamber. At the upper end of the chamber, if the upbound tow is a 9-barge double or a configuration that allows passage of pleasure boats, some time is saved with the exchange of tow during the tow bye time. The upper approach is in good shape, with

four cells above the lock used by waiting tows. To improve Dresden Island lock, wall extensions and additional haulage would be needed. An increase in commercial and recreation craft could increase the bottleneck and maintenance needs at Dresden Island. The lower left cells below the lower guide wall at Dresden Island fill with silt at present traffic levels. The two upper cells will be useless at increased traffic levels.

- 22. If over 60 percent of capacity is used, it appears that 30 to 40 percent of capacity still remains.
- 23. What constraints are eliminated when analyzing unconstrained demand? Agricultural land base; drought; physical dimensions of the river; highways as competitors; and highways as a mode to move grain to waterways?
- 24. Place a user fee on barges to make them pay for costs of the navigation system.
- 25. Navigation improvements will increase capacity to accommodate increased traffic.

COMMODITY/PRODUCT SHIPMENTS AND DATA

- Need improved cargo data and forecasts, particularly for hazardous commodities.
- 2. Illinois Waterway has become a focus of opportunity for Great Lakes ports, with the decline in direct overseas vessel traffic. (Marketing efforts are examining potential for increased cross-lake-river U.S./Canadian trade following the recent signing of the U.S./Canadian Bi-Lateral Trade Agreement.) Maritime activity on Illinois Waterway will likely increase.
- 3. Four separate businesses wrote stating their reliance on the Illinois Waterway for shipment and receipt of goods and commodities. One of these specifically stated they anticipated increased shipments of stone and gravel up the Illinois Waterway.
- 4. Any improvements to the Illinois Waterway's infrastructure could enhance grain traffic.
- 5. The Chicago Board of Trade's future market depends on deliverable grain at Chicago, which moves downward through the Illinois Waterway.
- 6. U.S. Department of Agriculture, Office of Transportation monitors weekly volumes of agricultural products transported by barge along the Mississippi River and its major tributaries (PMS data) in cooperation with the Corps. One of its monitoring sites is LaGrange.

- 7. The waterway system makes exports more price competitive by moving commodities (coal, grain, petroleum) in large volumes at a low unit cost.
- 8. New Orleans will continue to be the major grain exporting location from the U.S. and barge transportation will continue to be the best method for delivery of grain to New Orleans. Illinois Waterway grain shipments are a significant share of Upper Mississippi River System's total shipments to New Orleans.
- 9. Illinois Waterway corn shipments are estimated to average 30 percent of all corn exported from the Mississippi River ports from 1979-1989. Illinois Waterway soybean shipments are estimated to average 18 percent of all soybeans exported from New Orleans from 1979-1989.
- 10. Involve the grain and barge carrier industry in a timely fashion when repairs or maintenance are contemplated, to minimize adverse impacts to all areas of the grain marketing channel.
- 11. Biotechnology progress will lead to increases in yields and crop production.
- 12. Corps' study reports a 25 percent increase in tonnage on the Illinois Waterway from 1970 to 1985.
- 13. Traffic moving down the Illinois Waterway increases as one progresses southbound (by nearly 49 percent in 1988).
- 14. It is difficult to perceive continuing traffic growth, since production of agricultural products is likely to decrease. Plan of study ignores the shrinking agricultural land base when it forecasts expanding agricultural production.
- 15. Skeptical about projections that Midwest coal production will increase.
- 16. There is little interchange of commodities between Minnesota and the Illinois Waterway.
- 17. Navigation is vital to Midwest and entire nation. Water transportation enhances the country's ability to compete in an international market place and assists in the balance of trade. The Illinois Waterway is an essential part of Illinois commercial navigation and must be able to efficiently handle current and future traffic levels. Illinois Waterway significantly contributes to the economic well-being of Illinois, particularly the agricultural interests. Economic development goes hand in hand with navigation.

18. How will navigation improvements impact agricultural resources.

Upper Mississippi River System is a vital shipping artery, important for the movement of agricultural and other products and fertilizer.

Illinois Waterway is essential part of Illinois commercial navigation system and must be able to efficiently handle current and future traffic levels.

Efficient transportation of road salt, fertilizer, and grain products by the towing industry is critical to the economic viability of the country.

FISH AND WILDLIFE

- 1. Corps must be open and honest with the environmental community in order to alleviate concerns regarding navigation reconnaissance studies.
- 2. How will the system-wide environmental assessment be completed?
- 3. How will study address National Environmental Policy Act requirements?
- 4. Environmental consequences of increased commercial traffic are unknown. Address environmental concerns, including cumulative effects and possible perturbations of riverine ecosystems resulting from increased traffic and recreation.
- 5. Design a plan of study to address future environmental needs as well as navigation needs.
- 6. Use a system-wide approach in order to address cumulative impacts.
- 7. Identify and implement measures to reduce and mitigate existing and traffic-related environmental impacts, to protect fish and wildlife habitat/environment, and to enhance the environment. Corps must mitigate environmental impacts created by its navigation activities, as is consistent with all other Federal programs.
- 8. There are two national and several State wildlife refuges on the Illinois Waterway. The Illinois Waterway is important for migratory fowl and birds, including the great blue heron.
- 9. Prepare a comprehensive system-wide Environmental Impact Statement to address all recommendations developed in the reconnaissance report.
- 10. Navigation effects tasks of the Long-Term Resource Monitoring Program are being revised into testable hypotheses.

- 11. Implement the St. Louis Plan of Study, including avoid and minimize measures. St. Louis Plan and Long-Term Resource Monitoring data are necessary for continued planning for capital improvement measures.
- 12. What effect has commercial freight use had on wildlife and habitat along the Illinois Waterway.
- 13. The Environmental Management Program has study elements which examine navigation impacts on the environment.
- 14. An examination of past and future commodity movements could provide a base for environmental considerations and future planning needs, such as potential for hazardous spills and cleanup.
- 15. Improving transportation efficiency can be accomplished without degradation of the environment.
- 16. Significantly negative environmental impacts are being experienced by fish and wildlife; the Illinois Waterway ecosystem; public recreation; municipal, county, and State economies as related to tourism and development income.
- 17. Activity of Illinois Waterway fishermen depends on Illinois Waterway cleanup measures and preservation of fish habitat.
- 18. Access to water is critical to wildlife living on adjacent lands.
- 19. The Illinois Waterway and Peoria Lakes is the most pervasive landscape feature in the Peoria area.
- Commend Corps for environmental efforts, but much more needs to be done.
- 21. Corps has shown it has changed its focus to being more concerned with environment, as exemplified by permit process.
- 22. Continue using the team approach to identify issues and develop the Environmental Impact Statement.

RECREATION AND CULTURAL RESOURCES

- Will Illinois Waterway improvements impact on recreational and cultural aspects of the Illinois and Michigan Canal National Heritage Corridor?
- 2. Is Corps responsible for pleasure craft and their regulation? Who is?
- 3. How would commercial freight on the Illinois Waterway be cognizant of the presence of recreational craft?

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- 4. Grateful for the splendid tourism promotion program in the Rock Island District, Corps of Engineers (e.g., visitor centers).
- 5. Recreation and commercial boaters vie for the same water areas, making it increasingly difficult and dangerous for water-oriented recreational activities to take place.
- Peoria Lake is widely utilized for personal recreation and community activities.
- 7. Thousands view the Illinois River each day, benefiting from its scenic beauty.
- 8. The growing popularity of boating will create the need for more harbors, marinas, and campgrounds adjacent to the river.
- 9. Tourism is of equal importance to preserving the use of river resources. However, tourism will be viable only if the Illinois Waterway is preserved. Preserve the natural and economic impact the river has on the community.
- 10. The navigation study should consider existing recreation and future expansion of the recreation interests of the Illinois Waterway.
- 11. Existing and planned marinas near Morris, Moose Island, Bonnel Bend, the DuPage-Des Plaines intersection, Big Bend, and Three Rivers will generate much recreation traffic which will have to be dealt with.
- 12. Recreation traffic projections should utilize data from the EMP's study on the economic value of recreation on the Upper Mississippi River System.
- 13. River improvements and recreation developments are crucial needs to build tourism, and these rely on preservation of the Illinois Waterway in the city of Havana, Illinois.
- 14. The Illinois Waterway must be preserved, its banks must be stabilized, and its feeder streams controlled for a multi-purpose trail around the Illinois Waterway lakes to become a reality.
- 15. Tri-County riverfront plan is being updated.
- 16. Economic impact from recreation boaters is important.
- 17. Need to remedy the situation whereby no recreation projects are completed except by an Act of Congress.
- 18. Raise the river 1 to 1.5 feet over the next 4 to 5 years to keep it viable for recreation boaters and to help the environment.

- 19. Concerned about increased pleasure boat traffic on Sanitary and Ship Canal and Cal-Sag Channel.
- The Illinois Waterway, and particularly Peoria Lake, is a major water based recreation/conservation area.
- 21. Plan of study adequately addresses cultural resources.
- 22. There are numerous National Historic Register and Register eligible properties located along the Illinois Waterway.
- 23. Illinois Historic Preservation Agency should, at the earliest possible point in the study, review planned activities for potential impacts so that cultural resource concerns are incorporated into project design.
- 24. More than 300 archeological sites have been found on the Illinois Waterway riverbanks -- some very significant.
- 25. Direct impacts from operation and maintenance or construction to cultural resources is under control.
- 26. Archeological resources are nonrenewable and will be lost my mid-21st century.
- 27. Navigation system has inundated prehistoric sites and records along Illinois Waterway.
- 28. Remainder of Illinois Waterway should have cultural survey.
- 29. No funding is available for Illinois State Museum to gather more Illinois Waterway cultural data.
- 32. Control impact of siltation and erosion on cultural resources.
- 31. Bank erosion is the number one threat to cultural sites.
- 32. Illinois State Museum has data on Illinois Waterway archeological sites.

SEDIMENTATION AND WATER QUALITY

- Sedimentation and ice buildups cause maintenance problems on the Upper Mississippi River System for both environmental and navigation concerns.
- 2. Will the plan of study or reconnaissance reports address Illinois Waterway siltation?

- 3. While not the Corps' stated policy or duty, it should coordinate efforts and allocate resources to alleviate sedimentation problems on Illinois Waterway. Future management calls for reduced soil erosion from the watershed and management of the existing sediment. Corps must manage the inflow from Lake Michigan and the sedimentation levels within the entire waterway. Soil erosion and sedimentation will turn much of the Illinois Waterway into a mudflat in 10 to 15 years unless an action agenda is adopted and implemented. Corps is most qualified to reverse sediment problems and coordinate efforts to preserve Illinois Waterway values and navigation function.
- 4. Controlled discharges from Fon du Lac and Farmdale Dams cause erosion and sedimentation of Farm Creek and Illinois Waterway. Slow Farm Creek erosion to slow Illinois Waterway siltation.
- 5. Raise Illinois Waterway water level 1 to 1.5 feet to buy time until siltation control takes effect.
- Conditions on the upper reaches of the Kerfoot, Cole, Dempsey, and Heppe Creek Tributaries to the Illinois Waterway have resulted in a large sand bar in the Illinois Waterway east of the Murray Baker Bridge.
- Corps should cost-share erosion control project(s) to control land runoff.
- 8. The East Peoria Sanitary District is slowly providing slopewall and ditch checks in strategic places to stop erosion in the levee system.
- 9. Look at all avenues for solving the sediment problem, including upland treatment methods.
- 10. Corps navigation structures and activities accelerate siltation of non-channel Illinois Waterway.
- 11. Dredge the river and marina at Havana, Illinois, and place structures to prevent silt from buildup.
- 12. Corps has dredged the navigable channel as needed to maintain the desired width and depth.
- 13. Corps has constructed/managed sedimentation basins to minimize the sedimentation rate within its navigable channel. But, Corps has totally neglected the natural sedimentation basin provided by the remaining portion of the Illinois Waterway.
- 14. Increase the depth and volume of Peoria Lake.
- 15. Protect soil along the Illinois Waterway.
- 16. Provide a permanent watershed steward at the local level.

- 17. Corps appears ready to take on the challenge of controlling erosion and siltation.
- 18. Dresden Island causes currents to swirl around it, bringing in more silt. Determine effects of increasing traffic on the bottom topography near Dresden Island and its rate of change.
- 19. Illinois River Soil Conservation Task Force is addressing erosion problems to help eliminate sedimentation. It has pilot test-projects, including revegetation, revetments along with tire structures, and gabion baskets for gullies. Results from these test projects will not be fully realized for 2 years.
- 20. Corps dam near Ballard Island has created mudflats, caused flooding, and eliminated habitat and recreation in area. Ballard Island dam built to prevent barges from running into Marseilles Dam, but it has not worked. Corps caused siltation problem at Ballard Island, but now claims to have no authority to remedy situation.
- 21. Silt has formed a levee near LaSalle County, lowering property values and stopping recreation boat access.
- 22. Private citizens cannot afford to dredge and probably could not get Corps permission anyway.
- 23. Greenbook laws are rarely enforced if incorporated by cities (Erosion Control Book written by State of Illinois).
- 24. Corps has been imaginative in siltation control projects for Peoria area, e.g., island near Chillicothe is appreciated.
- 25. Corps project, like island creation, may help redirect silt into Peoria Lake to encourage fish and wildlife habitat.
- 26. Without sediment control, we will continue to spend tax monies to dredge.
- 27. Mississippi River does not have the severe erosion problems of Illinois Waterway because the Corps owns most of the Mississippi riverbank property.
- 28. All rivers have sediment problems, including the Upper Mississippi River.
- 29. Support action/efforts to preserve/clean Illinois Waterway.
- 30. Peoria Park District will help Corps reduce siltation on Illinois Waterway.

- 31. What is being done to prevent oil spills in the Illinois Waterway by barge/tow companies? Improve/increase provisions for prevention and cleanup of leakage and spills.
- 32. The Chicago sewage burden will increase the Corps' challenge in trying to control pollution on the Illinois Waterway. What can be done to clean the waste from the Chicago Sanitary and Ship Canal as it flows into the Illinois Waterway?
- 33. Has the amount of pollution in the Illinois Waterway increased or decreased in the recent past?
- 34. Is the Illinois Waterway receiving any waste effluents from surrounding communities, industries, or farms?
- 35. Enhance water quality.
- 36. Sewage effluent from Chicago compounds the Corps' problem of dealing with Illinois Waterway sedimentation.



DEPARTMENT OF THE ARMY ROCK ISLAND DISTRICT, CORPS OF ENGINEERS

CLOCK TOWER BUILDING—P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004
February 24, 1989

Planning Division

UPPER MISSISSIPPI RIVER AND ILLINOIS WATERWAY NAVIGATION STUDIES

Two navigation reconnaissance studies are to be undertaken by the Corps of Engineers in Fiscal Year 1990. The studies encompass the Upper Mississippi River and the Illinois Waterway. These studies will involve system-wide economic and environmental data. Any future facility studies within St. Paul, St. Louis, and Rock Island Districts will be accomplished by those Districts (see enclosed map).

The studies reflect a three-point management approach that has evolved over several years regarding navigation responsibilities on the Upper Mississippi River and Illinois Waterway Systems.

Routine operations and maintenance activities, including the addition of safety features, constitute the foundation, and first management point, upon which our navigation mission is based. Routine repairs and maintenance activities keep system components safe and operational.

The second point involves our major maintenance program which began about 1975 and is expected to continue through the late 1990's. The primary purpose of this effort is to keep the existing navigation system, and its component parts, structurally sound and operational for up to 50 years. By definition, the work done under this management point is of a substantially larger scale than routine operation and maintenance (O&M).

The third and final point in the management approach is planning for the future. The proposed navigation studies respond to Corps' responsibilities to formulate a strategic approach for sound capital investment planning related to our Nation's inland waterways' infrastructure. These studies begin the process of establishing prioritized, waterway specific, capital investment recommendations, including efficiency measures, required to handle future traffic.

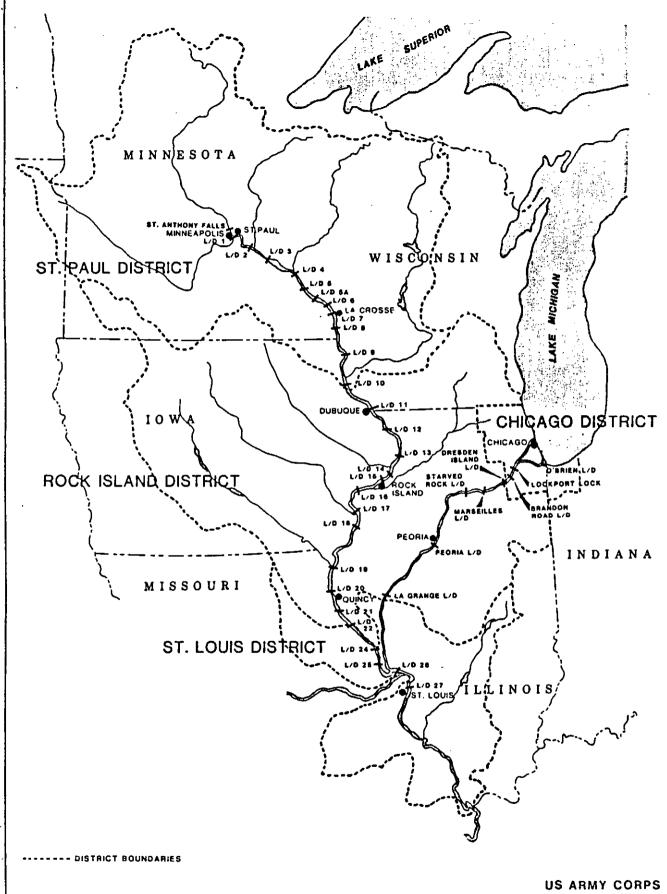
At the reconnaissance level for each study, we propose to examine information related to the existing condition (e.g., engineering, economics, environmental, and social parameters) and to determine what navigation and environmental problems and opportunities require more detailed study. As an integral part of the formulation process, we will conduct environmental studies which will identify enhancement measures. This will be done in coordination with environmental enhancement measures broader in scope, such as the Upper Mississippi River System - Environmental Management Program (UMRS-EMP). Specific capital investment recommendations would be deferred until completion of any follow-on feasibility studies, and be based on rigorous economic analysis. Potential economically justified solutions which are identified at the reconnaissance level will be conceptual in. nature.

More details concerning the purpose and content of the two reconnaissance studies will be forthcoming in a "Plan of Study" (POS) scheduled for release later this fiscal year. A preliminary table of contents for the POS is included with this notice for your information. If you should have any questions or require any additional information, please call Mr. Mark Schroeder or Mr. Nelson Cordoba of our General Investigations and Special Studies Branch, project managers for the Mississippi River and Illinois Waterway studies, respectively, at 309/788-6361, or you may write to the following address:

District Engineer U.S. Army Engineer District, Rock Island ATTN: Planning Division Clock Tower Building - P.O. Box 2004 Rock Island, Illinois 61204-2004

> Neil A. Smart Colonel, U.S. Army District Engineer

Enclosures

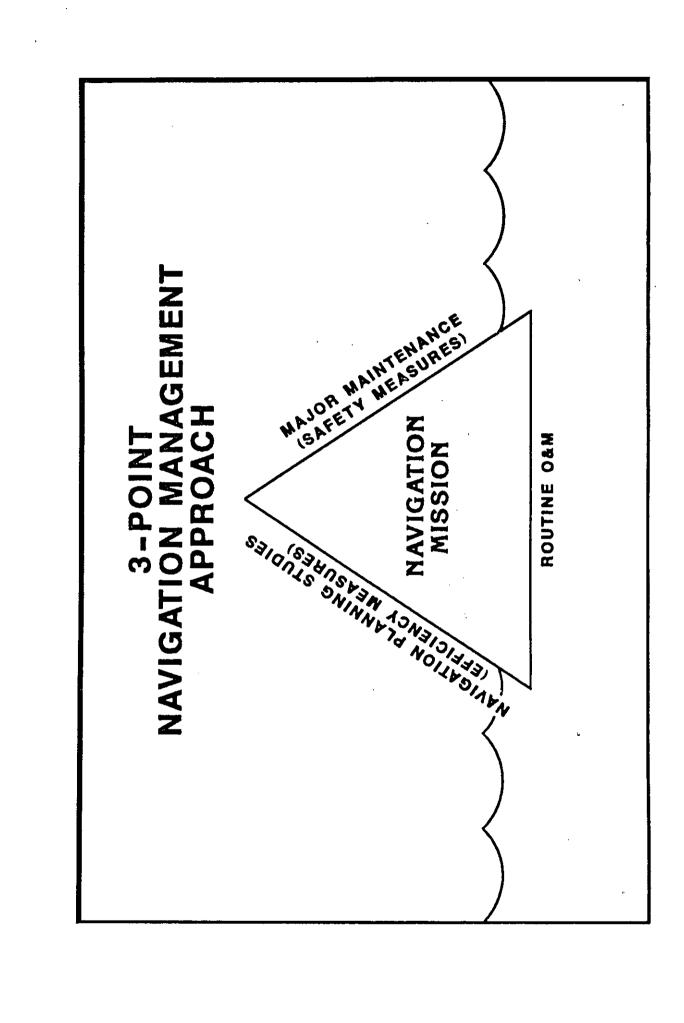


NOTE: OPERATION & MAINTENANCE OF BRANDON ROAD, LOCKPORT, & O'BRIEN LOCKS & DAMS IS THE RESPONSIBILITY OF THE ROCK ISLAND DISTRICT

OF ENGINEERS

UPPER MISSISSIPPI RIVER DISTRICT BOUNDARIES

FEB. 1989



ROCK ISLAND DISTRICT, CORPS OF ENGINEERS

TABLE OF CONTENTS NAVIGATION STUDIES PLAN OF STUDY

- I. AUTHORITY
- II. BACKGROUND
 - A. History of Navigation
 - Navigation System Description
 - Historic Trends
 - Commodity Data
 - Previous Studies
 - B. Environmental Awareness
 - Natural Resources
 - Cultural Resources
 - Previous Studies
 - Current Studies

III. OBJECTIVES OF STUDY

- A. Navigation Traffic Assessment
 - Why Needed
 - Projections to be Used
 - Future Traffic Effects on Delays, Utilization, and Tonnage
 - Types of Alternatives
 - Schedule
- B. Environmental Implications
 - General Systemic Effects of Navigation
 - Future Direction and Emphasis
- IV. COORDINATION EFFORTS
- V. CONCLUSIONS



DEPARTMENT OF THE ARMY ROCK ISLAND DISTRICT, CORPS OF ENGINEERS CLOCK TOWER BUILDING—P.O. BOX 2004 ROCK ISLAND, ILLINOIS 61204-2004

December 26, 1989

Planning Division

NOTICE OF INITIATION

Reconnaissance Study for Illinois Waterway Navigation System

The Congress of the United States has appropriated funds for the U.S. Army Corps of Engineers, Rock Island District, to initiate a reconnaissance study for the Illinois Waterway navigation system. The study is authorized by Section 216 of the Flood Control Act of 1970 (Public Law 91-611).

The Illinois Waterway is a 348-mile portion of the Inland Waterway System, located entirely within the State of Illinois. The eight existing locks and dams on the waterway connect the city of Chicago and the Great Lakes with the Mississippi River at Grafton, Illinois. A map of the study area is enclosed.

The reconnaissance study will examine available information related to the existing condition of the structures; the existing and future levels of traffic; environmental concerns and objectives; and the need for, and economic feasibility of, a variety of improvements. The result will be a determination of a Federal interest in future navigation improvements and a recommendation for establishing priorities for any required feasibility studies of specific capital investments. Potential nonstructural efficiency measures also will be considered.

The reconnaissance study is scheduled for completion in the spring of 1991. At that time, a report will be prepared that will incorporate the study findings and recommendations.

In order to establish and maintain communications between the Corps of Engineers, State and Federal agencies, and interested groups, a meeting is scheduled at the Continental Regency Hotel, 500 Hamilton Boulevard, Peoria, Illinois, on Wednesday, January 31, 1990, from 2 p.m. to 5 p.m. The first portion of the meeting will be informational in nature, followed by an exchange of ideas, concerns, and comments between the interested

parties and the Corps of Engineers regarding the Illinois Waterway Navigation Study. Please use and bring to the meeting the enclosed comment sheet, with your comments and concerns. The sheets will be collected by the Corps of Engineers and will be used in the plan formulation process of the study. Should you be unable to attend the meeting and have input to provide, please forward your comment sheet, prior to the meeting, to the following address:

District Engineer U.S. Army Engineer District, Rock Island ATTN: Planning Division (CENCR-PD-W) Clock Tower Building - P.O. Box 2004 Rock Island, Illinois 61204-2004

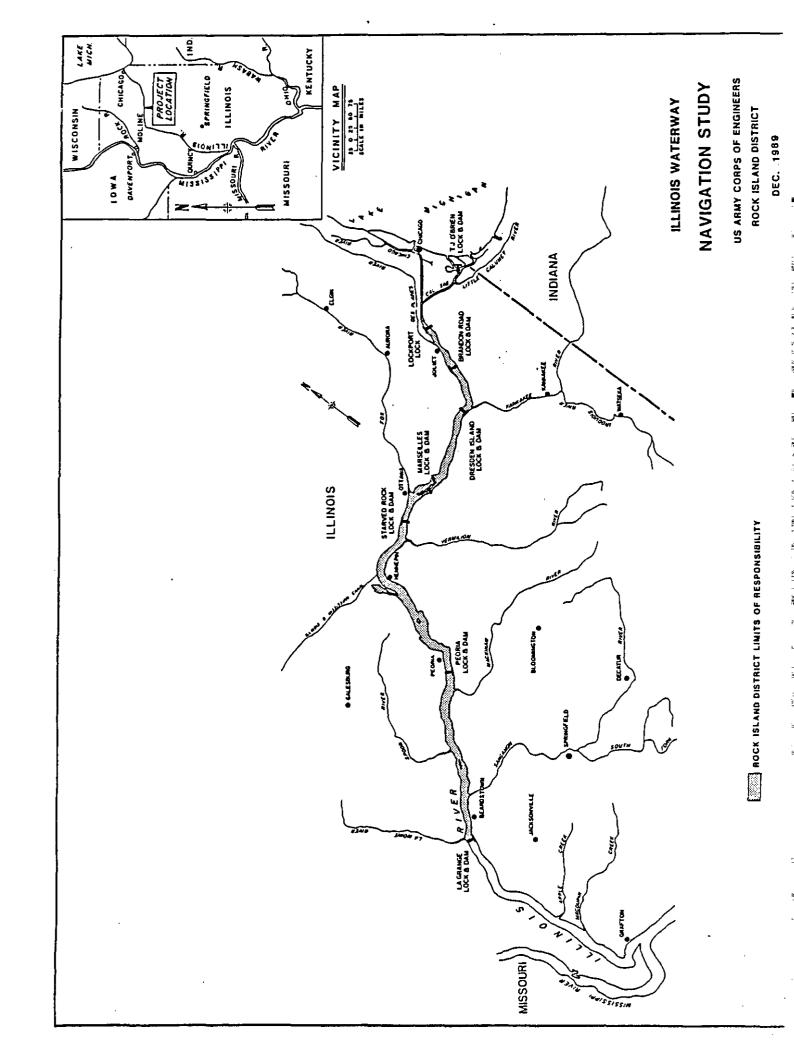
If you should have further questions, concerns, or require additional information, please call the study manager, Mr. Nelson Cordoba, at 309/788-6361, Ext. 399.

Sincerely,

John R. Brown

Colonel, U.S. Army District Engineer

Enclosures



Fold

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division (CENCR-PD-W)
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

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will result in not being added to the Illinois Waterway			

Phone Number

Navigation Study mailing list.



DEPARTMENT OF THE ARMY ROCK ISLAND DISTRICT, CORPS OF ENGINEERS CLOCK TOWER BUILDING—P.O. BOX 2004 ROCK ISLAND, ILLINOIS 61204-2004

Planning Division

MARCH 09, 1990

SEE DISTRIBUTION LIST

Thank you for your expressed interest in our Illinois Waterway Navigation Reconnaissance Study and the January 31, 1990, public meeting held in Peoria, Illinois. A meeting summary has been prepared and we have enclosed a copy with this letter.

If we can be of further assistance, please feel free to call the Study Manager, Mr. Nelson Cordoba, at 309/788-6361, Ext. 399, or write to the following address:

District Engineer U.S. Army Engineer District, Rock Island ATTN: Planning Division Clock Tower Building - P.O. Box 2004 Rock Island, Illinois 61204-2004

Sincerely,

Patrick T. Burke, P.E. Acting Chief, Planning Division

Enclosure

ILLINOIS WATERWAY NAVIGATION RECONNAISSANCE STUDY

SUMMARY OF PUBLIC MEETING

BACKGROUND

On December 26, 1989, a Notice of Initiation for the Illinois Waterway Navigation Study was distributed to approximately 1,200 State and Federal agencies, interest groups, and private citizens. The notice included an invitation to attend a public meeting at the Continental Regency Hotel in Peoria, Illinois, on January 31, 1990.

PURPOSE

The purpose of the meeting was to establish communication and exchange ideas and concerns early in the first phase of the planning process.

SUMMARY OF MEETING

The meeting was attended by approximately 60 persons expressing a cross-section of interest in the study. Representatives from the U.S. Coast Guard; U.S. Fish and Wildlife Service; several agencies from the State of Illinois; Peoria and Woodford Counties; the Cities of Peoria, Havana, and Ottawa, Illinois; East Peoria Drainage and Levee District; Tri-County Planning Commission and Riverfront Action Forum; and over 20 special interest groups came to the meeting. Since the meeting was announced, over 30 written statements have been received. Many of the written or expressed comments reflect support for the study and favor broadening the scope to address a variety of concerns related to environmental, cultural, and sedimentation issues.

STUDY OUTLOOK

After consideration is given to the information obtained at the public meeting and that which has been provided in writing, the Corps of Engineers will continue their investigation in order to determine if there is a potential Federal interest in navigation improvements on the Illinois Waterway. The reconnaissance study is scheduled for completion in the spring of 1991. After review by higher authority, a report will be prepared that will incorporate the study findings and recommendations.

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WILLIAM T REID, 4533 BOURNEDALE DRIVE PEORIA IL 61614

PERTINENT CORRESPONDENCE

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RECONNAISSANCE REPORT FOR ILLINOIS WATERWAY NAVIGATION STUDY

APPENDIX H PERTINENT CORRESPONDENCE

TABLE OF CONTENTS

<u>Subject</u>	Page
Letter from U.S. Department of the Interior, dated March 27, 1989	H-1
Letter from Growmark, dated May 2, 1989	H-3
Letter from State Historical Society of Iowa, dated August 17, 1989	H-5
Letter from Office of the Governor, State of Illinois, dated August 18, 1989	н-6
Letter from Missouri Dept of Conservation, dated August 22, 1989	H-7
Letter from Illinois Historic Preservation Agency, dated August 22, 1989	н-9
Letter from Office of Administration, State of Missouri, dated August 30, 1989	H-10
Letter from Illinois Department of Conservation, dated September 7, 1989	н-11
Letter from Office of the Governor, State of Illinois, dated September 18, 1989	H-12
Letter from U.S. Department of the Interior, dated October 11, 1989	н-13
Letter from Wisconsin Department of Natural Resources, dated November 22, 1989	H-15
Letter from Orba-Johnson Transshipment Co., dated December 12, 1989	H-17
Letter from Minnesota Department of Transportation, dated December 15, 1989	H-18

TABLE OF CONTENTS (Cont'd)

<u>Subject</u>	<u>Page</u>
Letter from U.S. Department of Transportation, Maritime Administration, dated January 2, 1990	H-19
Letter from National Waterways Conference, Inc., dated January 3, 1990	H-20
Letter from Mid-America Transportation Co., dated January 8, 1990	H-21
Letter from Chicago Board of Trade, dated January 10, 1990	H-22
Letter from Mississippi River Parkway Advisory Council, dated January 19, 1990	H-24
Letter from East Peoria Sanitary District, dated January 23, 1990	H-25
Letter from U.S. Department of Agriculture, Office of Transportation, dated January 23, 1990	H-26
Letter from U.S. Department of Commerce, National Oceanic and Atmospheric Administration, dated January 23, 1990	H-28
Letter from Illinois State Water Survey, dated January 26, 1990	H-29
Letter from Illinois Historic Preservation Agency, dated January 29, 1990	н-31
Letter from Tri-County Regional Planning Commission, dated January 31, 1990	H-32
Letter from Heartland Water Resources Council of Central Illinois, dated January 31, 1990	H-34
Letter from Illinois Department of Conservation, dated January 31, 1990	H-38
Letter from U.S. Congress, House of Representatives, dated April 2, 1990	H-40
Letter from Illinois Department of Transportation, dated April 4, 1990	H-41
Letter from U.S. Department of the Army, Louisville District, dated June 18, 1990	H-42

TABLE OF CONTENTS (Cont'd)

Subject	<u>Page</u>
Letter from Illinois Historic Preservation Agency, dated June 27, 1990	н-52
Letter from Illinois State Water Survey, dated June 28, 1990	H-55
Letter from U.S. Fish and Wildlife Service, Rock Island Field Office, dated June 28, 1990	н-58
Letter from the U.S. Department of the Army, St. Louis District, dated July 5, 1990	н-60
Letter from the U.S. Environmental Protection Agency, Region 5, dated July 10, 1990	H-83
Letter from Paul W. Hansen, Director of Midwest Regional Office, Izaak Walton League of America, dated July 23, 1990	H-85



United States Department of the Interior

FISH AND WILDLIFE SERVICE

COM: 309/793-5800

IN REPLY REFER TO:

ROCK ISLAND FIELD OFFICE (ES)
1830 Second Avenue, Second Floor

FTS: 386-5800

Rock Island, Illinois 61201

March 27, 1989

Colonel Neil A. Smart
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Smart:

This is in response to your public notice for the proposed Upper Mississippi River and Illinois Waterway Navigation Studies dated February 1989. We commend your early coordination and systemwide approach to the proposed reconnaissance studies.

We recommend that you address the following in the proposed Reconnaissance Plan of Study:

- a. How capital investment recommendations will be formulated for all three Corps Districts on the Upper Mississippi River System;
- b. How system-wide ecological and economic analyses will be completed;
- c. Coordination requirements and the process for accomplishing these requirements including use of existing work groups;
- d. National Environmental Policy Act procedures to be taken; and,
- e. Future planning process requirements and tentative schedules.

We remain concerned that the environmental consequences of increasing commercial navigation traffic are still largely unknown. Much of the information proposed for collection by the St. Louis District Plan of Study and the Long Term Resource Monitoring Program is necessary for you to make an informed decision relative to continued planning for any capital

improvement measures. In addition, little has been proposed to address the cumulative effects of increasing tow traffic and the possible limit to perturbations on the riverine ecosystem.

As with our coordination on the Major Rehabilitation Program, the questions at hand are very complex. We will continue to work with you to identify planning requirements and to seek mutually acceptable conclusions and recommendations. We anticipate being able to negotiate a Fish and Wildlife Coordination Act transfer fund agreement at the conclusion of the Reconnaissance Plan of Study review period.

Sincerely

Richard C. Wersen

Field Supervisor

cc: ILDOC

MODOC

IADNR

WIDNR

MNDNR

USEPA

SLD

SPD



May 2, 1989

GROWMARK as a regional farmer cooperative serving the farmers in Illinois, Iowa, and Wisconsin is very dependent on the upper Mississippi and Illinois river systems for movement of grain and fertilizer products. The Army Corps of Engineers estimates that 75-80 percent of all tonnage moved on these waterways is agricultural products.

In recent years the delays at Lock and Dam 22 near Hannibal, MO have increased by a considerable amount. Some predict that the present river system will be very inadequate by 1995.

GROWMARK supports the U.S. Army Engineer District at Rock Island to conduct a study on the Mississippi River and Illinois Waterway Navigation Systems to determine what improvements are needed in the future to meet increasing barge transportation needs.

GROWMARK will greatly appreciate your assistance in getting the Corps funded to conduct this study during FY 1990 under Section 216 of the Flood Control Act of 1970.

Sincerely,

GROWMARK, Inc.

James F. Eberwine Director of Traffic

JFE:jdw

bcc: Chip Smith, Corps of Engineers

MAILING LIST

The Honorable Paul Simon United States Senator 462 Dirksen Bldg. Washington, DC 20510

The Honorable Alan J. Dixon United States Senator 331 Hart Bldg. Washington, DC 20510

The Honorable Tom Harkin United States Senator 316 Hart Bldg. Washington, DC 20510

The Honorable Charles E. Grassley United States Senator 135 Hart Bldg. Washington, DC 20510

The Honorable Herbert Kohl United States Senator 708 Hart Bldg. Washington, DC 20510

The Honorable Robert W. Kasten United States Senator 110 Hart Bldg. Washington, DC 20510



State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

August 17, 1989

Mr. Dudley M. Hanson, P.E. Chief, Planning Division Rock Island District Corps of Engineers Clock Tower Building P.O. Box 2004 Rock Island, IL 61204-2004

RE: COE - PLAN OF STUDY - NAVIGATION RECONNAISSANCE STUDIES - UPPER MISSISSIPPI RIVER AND ILLINOIS WATERWAY

Dear Mr. Hanson:

We have reviewed the Plan of Study for this project and look forward to working with you on the reconnaissance studies.

Thank you for the opportunity to comment on the POS.

Sincerely,

Kay Simpson

Review and Compliance Program
Bureau of Historic Preservation



STATE OF ILLINÓIS

OFFICE OF THE GOVERNOR

SPRINGFIELD 62706

JAMES R. THOMPSON

August 18, 1989

District Engineer U.S. Army Engineer District ATTN: Planning Division Clock Tower Building, P.O. Box 2004 Rock Island, Illinois 61204-2004

SAI#: 89-08-18-26

REGIONAL# 00

TITLE: Navigation Reconnaissance Studies Upper Mississippi River and

Illinois Waterway - Environmental Assessment

DEPT.: Department of the Army

The Illinois State Clearinghouse has received a "Notice of Intent" for the above project.

The review of your proposal has begun as required by law. You should receive additional correspondence on this project within 30 days. Please refer to the SAI number in future correspondence on this proposal. For further information call (217)782-1671.

Cheryl Bradley

Illinois State Clearinghouse Room 107 Stratton Building Springfield, Illinois 62706

MISSOURI DEPARTMENT OF CONSERVATION



MAILING ADDRESS
P.O. Box 180
Jefferson City, Missouri 65102-0180

STREET LOCATION
2901 West Truman Boulevard
Jefferson City, Missouri

Telephone: 314/751-4115 JERRY J. PRESLEY, Director

August 22, 1989

Mr. Nelson Cordoba
Planning Division
Rock Island District, Corps of Engineers
Clock Tower Building
P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. Cordoba:

We appreciate receiving a copy of the "Plan of Study for Upper Mississippi River and Illinois Waterway Navigation Studies" dated August 1989. As the state fish and wildlife agency we would be most interested in participating in this study effort.

Review of the Plan of Study raised several questions or comments as follows:

- Page 11. Forecasts of "ever expanding" agricultural production for ultimate waterway movement ignore the fact that the land base for agricultural production is shrinking due to farm programs, urbanization, etc. It's difficult to perceive a continuing upward spiral for traffic growth if production is reduced. We are also somewhat skepical about predictions that midwestern coal production will continue to grow.
- Page 22-23 Existing Conditions. The question of balancing transportation modes, water, rail, highway and air seems to be missing. We wonder if the Corps of Engineers is the best judge of investments in waterways as opposed to rail, highways, etc.
- Page 24. If the locks and dams are used to "over 60 percent" it would appear that 30-40 percent capacity still remains. Is one of the issues scheduling and efficient utilization?
- Page 26. A list of constraints eliminated in analyzing for "unconstrained demand" would be enlightening. Did constraints include land base for agricultural production, drought, physical dimensions of the river, highway systems as competitors and as movers of grain to waterway terminals?

H-7

COMMISSION

Mr. Nelson Cordoba August 22, 1989 Page Two

The opportunity to offer these brief comments is appreciated. If you wish to discuss our involvement in this study, please contact William H. Dieffenbach of my staff.

Sincerely,

DAN F. DICKNEITE

ENVIRONMENTAL ADMINISTRATOR

cc: U. S. Fish and Wildlife Service Rock Island, Illinois

Old State Capitol • Springfield, Illinois 62701 • (217) 782-4836

2171785-4997

STATEWIDE Plan of Study Upper Mississippi River and Illinois **Waterway**

August 22. 1989

Mr. **Dudley** M. Hanson, **P.E.**Chief, Planning Division
District Engineer
U.S. Army Engineer District, Rock Island
Attention: Planning Division
Clock Tower Building - Post Office Box 2004
Rock Island, 111 inois 61204-2004

Gentlemen:

Thank you for requesting comments from our office concerning the possible effects of the project referenced above on cultural resources. Our comments are **requi** red by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properti es".

IHPA LOG #89080801

Thank you for the opportunity to comment on the Plan of Study for Upper Mississippi River and Illinois Waterway Navigation Studies. Our staff has reviewed this document and have determined that adequate consideration was given to cultural resources in the planning stages of this project.

If you have any further questions, please contact Joyce A. **Wi** 1 **liams,** Staff Archaeologist, Illinois Historic Preservation Agency, Old State Capitol, Springfield, Illinois 62701, 217/785-1279.

Sincerely,

Theodore W. Hi ld ' ' Deputy State Historic

Preservation Officer

TWH: JAW: bv

cc: CoE-St. Paul CoE-St. Louis John Ashcroft Governor

James R. Moody

Commissioner



State of Missouri

OFFICE OF ADMINISTRATION

Post Office Box 809
Jefferson City
65102

Stan Perovich
Director
Division of General Services

August 30, 1989

Dudley M. Hanson, P.E. Chief, Planning Division Rock Island District U.S. Department of the Army Corps of Engineers Clock Tower Building P. O. Box 2004 Rock Island, Illinois 61204-2004

Dear Mr. Hanson:

Subject: 89080031 - Plan of Study for Upper Mississippi River and Illinois Waterway Navigation Studies

The Missouri Federal Assistance Clearinghouse, in cooperation with state and local agencies interested or possibly affected, has completed the review on the above project application.

None of the agencies involved in the review had comments or recommendations to offer at this time. This concludes the Clearinghouse's review.

A copy of this letter is to be attached to the application as evidence of compliance with the State Clearinghouse requirements.

Sincerely,

Lois Pohl, Coordinator Missouri Clearinghouse

is Boll

LP:cm

Department of Conservation

life and land together

LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62701-1787 CHICAGO OFFICE • ROOM 4-300 • 100 WEST RANDOLPH 60601 MARK FRECH, DIRECTOR - KATHY SELCKE, ASSISTANT DIRECTOR

September 7, 1989

Mr. Dudley M. Hanson, P. E. Chief, Planning Division U. S. Army Corps of Engineers Rock Island District Clock Tower Building, P O Box 2004 Rock Island, IL 61204-2004

Dear Mr. Hanson:

Thank you for your letter of August 7, 1989 and the Plan of Study (POS) for Navigation Reconnaissance Studies on the Upper Mississippi River and Illinois Waterways.

My staff and I look forward to working with the Rock Island and St. Louis Corps Districts during the course of the studies. We are pleased to note that commercial navigation and environmental concerns will receive equal consideration during the planning process.

Sincerely

Mark Frech Director

MF:RWL:bg

cc: U. S. Fish & Wildlife Service, Rock Island Colonel James Corbin, St. Louis Corps District



STATE OF ILLINOIS

OFFICE OF THE GOVERNOR

SPRINGFIELD 62706

JAMES R. THOMPSON
GOVERNOR

SAI# 89-08-18-26

SUBJECT: Navigation Reconnaissance Studies Upper Mississippi River and Illinois Waterway - Environmental Assessment

TO: District Engineer
U.S. Army Engineer District
ATTN: Planning Division
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

The Illinois State Clearinghouse has reviewed the reference subject pursuant to the National Environmental Policy Act of 1969. State agencies which are authorized to develop and enforce environmental standards have been given the opportunity to comment on this subject. At this time no comments have been received.

Illinois State Clearinghouse

September 18, 1989

CC: Roger Barcus
I.D.O.T.
Division of Aeronautics
One Langhorne Drive
Capital Airport
Springfield, Illinois 62706



United States Department of the Interior

FISH AND WILDLIFE SERVICE

ROCK ISLAND FIELD OFFICE (ES)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

COM: 309/793-5800

IN REPLY REFER TO:

FTS: 386-5800

October 11, 1989

Colonel John R. Brown
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

We have reviewed the Plan of Study for Navigation Reconnaissance Studies on the Upper Mississippi River and Illinois Waterway. The plan describes the objectives and content of the future reconnaissance studies and how they will be accomplished in cooperation among the three Corps districts. We have the following comments:

Page 6, Natural Resources. The Illinois River is an important migratory link in the Mississippi Flyway. Each year thousands of waterfowl and other migratory birds use the remaining wetlands of the Illinois River for feeding and nesting. In addition some species such as the great blue heron nest in the river's corridor. Two National Wildlife Refuges are located on the Illinois River, the Chautauqua National Wildlife refuge near Havana and a portion of the Mark Twian National Wildlife Refuge at the river's juncture with the Mississippi River. In addition, the Illinois Department of Conservation manages several wildlife areas along the Illinois River.

<u>Page 20. UMRS-EMP</u> The navigation effects Tasks of the Long Term Resource Monitoring Program currently are being revised into testable hypotheses.

Page 24-27, Projected Traffic The Reconnaisance Studies should provide greater detail on the methods and assumptions of the 1988 Inland Waterway Review. Differences from past projections should also be addressed. Projections of recreation traffic should take advantage, to the extent possible, data being collected for the Environmental Management Program recreation economics study.

Page 31. Environmental Coordination We strongly urge you to continue the team approach used for the St. Louis District Plan of Study. The team can assist you in identifying significant issues and development of a comprehensive environmental impact statement (EIS). In addition, we anticipate that we will be providing you a planning aid letter in accordance with the Fish and Wildlife Coordination Act (FWCA).

In conclusion, I'd like to reiterate some concerns expressed in my letter of March 27, 1989. Much of the information necessary for you to make an informed decision on the environmental impacts of any recommendations in the Reconnaissance Studies is still largely unavailable. This only emphasizes the urgency in initiating the St. Louis District Plan of Study. Once these studies have been accomplished, additional scoping will be necessary to address the cumulative effects of increasing tow traffic and the possible limit to perturbations on the riverine ecosystem.

We are interested in meeting with your staff as soon as possible to define FWCA requirements and future transfer funding needs. Please contact Gail Carmody of my staff to arrange a suitable meeting time.

Sifice tely/

Richard C. Nelson Field Supervisor

CC: Col. Corbin, St. Louis District
Col. Baldwin, St. Paul District
MNDNR (Skrypek, Davis)
WIDNR (Neuman, Kennedy)
ILDOC (Lutz, Sallee, Atwood)
IADNR (Szcodronski, Schonhoff)
MODOC (Dieffenbach, Stucky)
USEPA (Bronoski, Chicago)

USFWS (AE/FP, EMTC, SPFO, MISO)

GC:hw

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besa

Secret

Box 7: Madison, Wisconsin 53:

November 22, 1989

IN REPLY REFER TO: 1650 - 2

Colonel John R. Brown
District Engineer
U. S. Army Engineer District
Clock Tower Building, P. O. Box 2004
Rock Island, Illinois 61204

SUBJECT:

Plan of Study for Navigation Reconnaissance Studies on the

Upper Mississippi River and Illinois Waterway

Dear Colonel Brown::

We have reviewed your Plan of Study for Navigation Reconnaissance Studies on the Upper Mississippi River and Illinois River and have the following comments:

The Plan of Study provides the necessary emphasis on giving equal consideration to environmental as well as navigation concerns during the planning process (Introduction, p.1). However, we note that the alternatives to be evaluated in the reconnaissance studies (p.27) consist only of navigation system improvements. Equal consideration should be given to evaluating alternative environmental improvements during the planning process, consistent with the objectives in Public Law 91-611.

The Plan of Study recommends a systems approach (p. 29), as opposed to a site-specific approach, which should enable a better understanding of the economic, social and environmental impacts of increased navigation traffic on the Upper Mississippi River System. We support the systems level approach.

The Plan of Study recognizes there is insufficient information to assess the environmental impacts of increased navigation on the Mississippi River (pgs. 19 & 29). Navigation improvements evaluated in the reconnaissance studies will undoubtedly increase the capacity of the Upper Mississippi River System to accommodate increased navigation. This only emphasizes the urgency in initiating the St. Louis District Plan of Study. Once these studies have been accomplished, additional scoping will be necessary to address the cumulative effects of increasing tow traffic and the possible limit to perturbations on the Upper Mississippi River ecosystem. The cumulative effects of any avoid and minimize measures adopted in conjunction with the St. Louis District Second Lock Program and the Corps of Engineers Lock and Dam Major Rehabilitation will also need to be factored into this analysis, should there be any such measures adopted or

recognized.

As indicated in the Plan of Study, the environmental aspects of the navigation studies should be coordinated with interested groups, the public, the U. S. Environmental Protection Agency, the U.S. Fish and Wildlife Service and the five States bordering the Upper Mississippi River.

I am also asking that you send me 5 copies of any system EIS related documents or site-specific EIS's on projects affecting Wisconsin so that we can carry out our environmental impact document review responsibilities pursuant to the national and Wisconsin environmental policy acts.

Sincerely,

Kathryn A. Curtner, Director

Bureau of Environmental Analysis and Review

KAC:MN

cc: Hal Meier - SD Craig Thompson - La Crosse Dave Kennedy - La Crosse Bob Roden - WZ/6

Richard Nelson, U. S. Fish and Wildlife Service, Rock Island

Col. Corbin, St. Louis District Corps of Engineers Col. Baldwin, St. Paul District Corps of Engineers

MNDNR (Davis)
ILDOC (Atwood)
IADNR (Schonhoff)
MODOC (Stucky)
USEPA (Bronoski)

OJT ORBA-JOHNSON TRANSSHIPMENT CO. P. O. Box 768 Keokuk, Iowa 52632 (319) 463-7162

December 12, 1989

U. S. Army Corps of Engineers Rock Island District P. O. Box 2004 Clock Tower Building Rock Island, Illinois 61204

Dear Sirs:

We have been asked by Mr. Paul Soyke if we support further navigation studies on the upper Mississippi and Illinois waterways.

As a transshipment terminal at UMR 371, we are very interested in the viability and reliability of our waterway systems.

Even at current use levels, it is apparent that congestion on the waterways is becoming a major factor in this geographic area.

Delays and stoppages are not just inconveniences but are costs that affect the ultimate consumer in terms of food and utilities, just to name two of many.

Studies that result in more efficient and beneficial use of the waterways are vital to the economic and environmental development of the waterways systems.

I appreciate the opportunity to express my opinion on issues having a major impact on our society.

Sincerely

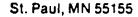
W. Breen Turley General Manager



M. W. (BILL) NEWSTRAND Director

sota Department of Transportation

artation Building,





Waterways Section Insportation Building MN 55155

612-296-1609

612 296-1609

December 15, 1989

Dudley Hanson, Chief Planning Division Rock Island District, U.S. Army COE Clocktower Building Rock Island, Illinois 61201

Dear Mr. Hanson:

The Ports and Waterways Section of the Minnesota Department of Transportation (Mn/DOT) has taken advantage of the opportunity to review the Corps proposals for navigation studies on the Upper Mississippi and the Illinois River. We feel that the studies will answer many questions and provide a strong base for planning on the rivers.

Mn/DOT supports the proposed study program which will investigate the rivers separately. Since there is very little interchange of commodity movement between our part of the Upper Mississippi and the Illinois we think that our needs require the individual analysis.

Thank you for the opportunity to comment on the proposal. We look forward to the completion of the studies. If we can provide assistance please call.

Sincerely/

M. William Newstrand, Director

Ports and Waterways



2300 East Devon Avenue Suite 366 Des Plaines, Illinois 60016-460

January 2, 1990

Dudley Harrison, Chief of Planning U.S. Army Engineer District, Rock Island Corps of Engineers Clock Tower Building Rock Island, IL 61204-2004

Dear Mr. Harrison:

Thank you for the opportunity to review the Plan of Study for Upper Mississippi River and Illinois Waterway Navigation Studies, August 1989. We support your study efforts and will be happy to assist you with our staff resources and maritime industry contacts.

The Illinois Waterway in recent years has become a focus of opportunity for Great Lakes ports such as Burns Harbor, IN, Chicago and Milwaukee. Since Great Lakes direct overseas vessel traffic has declined nearly fifty percent since 1980, Great Lakes ports near the Illinois Waterway are turning marketing efforts toward barge traffic. Port marketing efforts are also examining potentials for increased cross-lakeriver U.S. Canadian trade following the recent signing of a U.S./Canadian Bi-lateral Trade Agreement. These recent events appear to point toward increased maritime activity in the Illinois Waterway.

The Upper Mississippi River Environmental Management Program has a number of study elements examining navigation impacts on the environment. Concerns have been expressed for improved cargo data and forecasts, particularly for hazardous commodities. An examination of past and future commodity movements could provide a base for environmental considerations and future planning needs such as potential for hazardous spill and clean-up, etc.

The Upper Mississippi River and Illinois Waterway provides an important transportation alternative to Midwestern shippers and consignees.

We look forward to reviewing and assisting in your plan of study.

Yours truly,

ALPKA H. AMES, JR

Great Lakes Region Director



January 3, 1990

Col. John R. Brown
District Engineer
Army Engineer District, Rock Island
P.O. Box 2004
Rock Island, Illinois 61204

Dear Col. Brown:

HNC/djg

The FY 1990 Energy and Water Development Appropriations Act contains funds for navigation studies on the Upper Mississippi Waterway and also on the Illinois Waterway. Both of these waterways are, as you know, vital shipping arteries, particularly in the movement of grain and other agricultural products.

Over the last few decades, the structural modernization of both the Upper Mississippi Waterway and the Illinois Waterway has unfortunately been neglected. The recently funded navigation studies are long overdue, and I can tell you that there is a great deal of support among the waterway shipper and carrier industries in a thorough study of needed improvements. We are most hopeful that these studies can be expedited in every way possible.

Sincerely yours,

Harry N. dook

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MID-AMERICA TRANSPORTATION COMPANY

50 JEROME LANE

FAIRVIEW HEIGHTS, ILLINOIS 62208

TEL. 618-397-8310

TWX 910-756-2344

January 8, 1990

District Engineer
U. S. Army Engineer District, Rock Island
Clock Tower Building
P. O. Box 2004
Rock Island, IL 61204-2004

Dear Col. Brown:

Mid-America Transportation Company is a St. Louis based barge line which operates dry bulk barges and towboats on the Mississippi River and tributaries. On behalf of this Company we support both the concept and the initiation of the Reconnaissance Study for the Illinois and Upper Mississippi Waterway Navigation System.

If we can be of any help on this, please don't hesitate to contact us.

Sincerely,

MID-AMERICA TRANSPORTATION COMPANY

J. A. Tinkey,

President

JAT:cmc

January 10, 1990

Colonel John R. Brown
District Manager
U.S. Army Engineer District, Rock Island
Attn: Planning Division (CENCR-PD-W)
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

The Chicago Board of Trade (CBOT) has reviewed your "Plan of Study For Upper Mississippi River and Illinois Waterway Navigation Studies" dated August, 1989.

The CBOT recognizes that inland waterways play a major role in movement of grain and grain products, including the upbound movements of fertilizer, all of which are extremely important to both CBOT's domestic and export markets. In fact the CBOT grain futures market depends on deliverable grain at Chicago. Much of this deliverable grain moves downward through the Illinois Waterway. Therefore any improvements to its infrastructure could enhance grain traffic.

Since expedited movement of grain traffic is essential to delivery time at port the CBOT believes that priority should be given to those structures on the system which may create bottle necks on the river. We have noted that seven of the eight locks on the Illinois Waterway are fifty years or older. These locks were constructed at a time when tonnage on the waterways were no where near what they are today. As per your study, in 1970 53.8 million tons were shipped compared to 72 million in 1985. represents a 25% increase in a 15-year period. We also have noted that traffic moving downriver through the various locks increases as one progresses southbound. The last lockage before entering the Mississippi River at La Grange Lock in 1988 was 31.25 million tons compared to the northern lockage point at Lockport which was 15.98 million tons. This represents a 48.8 percent increase in tonnage between these two locks. (See U.S. Army Corps of Engineers, Rock Island District "Report on Upper Mississippi River and Illinois Waterway Navigation Systems" study). Also noted is that there are 138 terminals located on the Illinois River System. The CBOT believes that because of projected increases in barge traffic flow through the year 2000 the Corps should set its priority to enhance lock transit, particularly since the locks on the Illinois are 50 years or older. It would seem that structured improvements could be made to expedite transit time or perhaps larger lock replacements could be constructed to allow several tows at one time to transit. Another possibility could be structured improvements to lock approach areas. In any case we believe the locks themselves are in need of improvement — particularly those which perform the greater number of lockage.

For this reason the CBOT supports the U.S. Army Corps of Engineers study of the Illinois Waterways.

Yours yery truly,

/John R. Dobrzynski

Manager of Transportation

JRD/vaj

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STATE OF ILLINOIS MISSISSIPPI RIVER PARKWAY ADVISORY COUNCIL

ROOM 121 - CAPITOL BUILDING SPRINGFIELD, ILLINOIS 62708 TELEPHONE: AREA CODE 217 782-5247

January 19, 1990

Colonel John R. Brown, District Engineer Corps of Engineers P.O. Box 2004 Rock Island, Illinois 61204-2004

Dear Colonel Brown:

I am writing regarding the 1990 Reconnaisance Study for the Illinois Waterway and am listing below my preliminary comments:

- We are very grateful to you for your splendid tourism promotion program in the Rock Island District. I have visited the Information Center myself and I enjoyed seeing the displays and learned from the literature.
- 2) Please continue to involve the public in your projects, and improve the public understanding of waterways, especially in relation to conservation, ecology and the environment.
- 3) We are aware of the tremendous problem of sedimentation along the Illinois River, and we urge you to help coordinate the efforts to alleviate the problem. We urge you to allocate a portion of your resources to the task of alleviation or even correction, of this sedimentation. Cooperate with the research people, the townspeople, the farmers, the ecologists —— everybody who has a reasonable suggestion for an answer.
- 4) We know your task is compounded by the enormous drainage of sewage effluent from metropolitan Chicago. The sewage burden will increase the challenge you face in trying to control the pollution. Part of your assignment should be to improve the water quality of the Illinois River in cooperation with numerous agencies, associations and individuals.
- 5) Please send me a report from the January 31, 1990 meeting in Peoria.

SMV/GA/m

cc: MRPAC

Senator Paul Simon

Sincerely,

SENATOR SAM M. VADALABENE, CH.

CO-PILOT - DISTRICT III MRPC

H - 24

EAST PEORIA SANITARY DISTRICT

802 EAST WASHINGTON STREET • EAST PEORIA, ILLINOIS 61.s11 • PHONE 699-0165

January 23, 1990

Illinois Waterway Navigation Study: Comments:

Gentlemen:

The trustees of the East Peoria Sanitary District, the caretakers of part of Farm Creek, and it's tributaries, Kerfoot, Cole, Dempsey, and Heppe creeks make the following comments about the conditions of the upper reaches of these tributaries, out of EPSD boundaries, which result is a very large sand bar In the Illinois River east of the Murray Baker bridge.

'Iwo large water sheds are controlled by the Fondulac and Farmdale Dams, both have controlled discharges into Farm Creek. These controlled discharges after a heavy rain (\pm 3") or more, combined with Ackerman creek for . a total water shed of approximately 67 square miles, provides a tremendous erosive force in the lower reaches of Farm Creek. This erosive force causes soil erosion In the 13 mile section upstream of the EPSD boundary," out of our jurisdiction. This section of Farm Creek is sand and gravel, end Is moved very easily. The soils come to rest in the lower reaches of Farm Creek and the Illinois River.

The EPSD is slowly providing slopewalls end ditch checks in strategic

places to stop erosion in the levee system.

We ask that some form of erosion control be placed on these lands that are tributaries of Farm Creek for approximately 1½ miles East of our eastern boundary line.

Fy slowing the erosion in this section, less accretion will end up in tne Illinois River. If more information is needed, kindly call (309)!L193-0105,

Respectful. submitted,



January 23, 1990

Colonel John R. Brown
Planning Division (CFNCR-PD-W)
U.S. Army Engineer District, Rock Island
Clock Tower Building
P.D. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

The Office of Transportation (OT), U.S. Department of Agriculture, appreciates the invitation to attend your meeting regarding the Reconnaissance Study for Illinois Waterway Navigation System. At this time, unfortunately, OT does not have the available budget to attend the meeting in Peoria. However, we have prepared the following comments regarding your forthcoming study:

OT is very interested in research activities designed to improve the efficiency, performance and monitoring of the movement of agricultural commodities along the U.S. Inland Waterway System. For over two years, OT, in cooperation with various U.S. Army Engineer Districts, has monitored weekly volumes of agricultural products transported by barge along the Mississippi River and its major tributaries. One monitoring site is the Illinois River Lock and Dam 8 at LaGrange, Illinois. According to the data OT has received, approximately 14 million tons of grains and soybeans passed LaGrange in 1988, and in 1989, 13.8 million tons of these commodities were reported. The data is part of the Lock Performance Monitoring System (PMS), which encompasses the collection, editing, maintenance, and analysis of data collected at all Corps-operated locks.

The PMS offers timely information concerning inland waterway traffic. Should the Reconnaissance Study for the Illinois Waterway Navigation System use the PMS data for any aspect of the study, OT would be very interested in an evaluation of this data, as well as any other data applications used.



OT continues to be interested in future navigation improvements to the Inland Waterway System and looks forward to receiving periodic mailings concerning your Illinois Waterway Navigation Study.

Again, thank you for including OT on your list of invitees.

Sincerely,

Jaul & Kipler Paul E. Kepler, Director Domestic Division



UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

JAN 23 1990

District Engineer U.S. Army Engineer District, Rock Island ATTN: Planning Division (PD-W) Clock Tower Building - P. O. Box 2004 Rock Island, Illinois 61204-2004

Dear Sir:

Please send me a copy of the "Plan of Study for Illinois Waterway Navigation System" for my use in studying the Great Lakes.

Thank you for your time in this matter.

Sincerely,

Christian Andreasen

Captain, NOAA

Chief, Nautical Charting Division

Christian andreasen





Telephone (217) 333-9: Surface Water Sect 2204 Griffith Di Champaign, Illinois 61820-74

January 26, 1990

Colonel John R. Brown
District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division (CENCR-PD-IN)
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Colonel Brown:

The Notice of Initiation for a Reconnaissance Study for the Illinois Waterway Navigation System was referred to the Hydraulics and Sediment Studies group of the Surface Water Section by the Chief of the Water Survey. We are unable to attend the meeting in Peoria on January 31, 1990, but I have prepared the enclosed comment sheet for your information.

As noted in the comments, we are willing to offer our knowledge and expertise to assist you in this study.

Sincerely,

J. Rodger Adams

Senior Professional Scientist

J. Pody Atens

Phone: (217) 333-4728 FAX: (217) 333-;6540

bjh

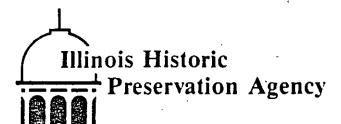
Enclosure as stated above

cc: Nani Bhowmik Chief Semonin

Date	1/26/90
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Illinois Waterway Navigation Study COMMENT SHEET

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Please contact the staf	<u>f member liste</u>	d below.
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Disclosure of names and addresses is subject to the	Name	T. D. J.
Anyone who file and the face was to the face of the fa		J. Rodger Adams
be added to our list of people who receive periodic mailings concerning the Illinois Waterway Navigation	Address	Illinois State Water Survey
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an result at hot being adoed to the Minor Warner		Champaign, IL 61820-7495
Navigation Study malling 8st	Phone Number	(217) 333-4728
	- ·	



Old State Capitol • Springfield, Illinois 62701 • (217) 782-4836

217/785-4997

Regional Reconnaissance Study for Illinois Waterway Navigation System

January 29, 1990

John R. Brown, Colonel
District Engineer, US Corps of Engineers
Rock Island District
Clock Tower Building
Post Office Box 2004
Rock Island, Illinois 61204-2004

Dear Sir:

Thank you for the Notice of Invitation of a Reconnaissance Study for the Illinois Waterway Navigation System. Though we will not be able to attend the meeting on Wednesday, January 31, 1990, we would like to express our concerns regarding potential impacts to historic properties by activities planned and implemented under this project.

As you are undoubtedly aware, numerous historic properties listed on the National Register of Historic Places, such as Briscoe Mounds in Will County and the Old Kaskaskia Village in LaSalle County, are located along the Illinois River. There are many more sites along the river which have not been evaluated for their eligibility for listing on the National Register. For example Duane Esarey of the Illinois State Museum has conducted a low-water archaeological survey along portions of the Illinois River and identified over 200 sites.

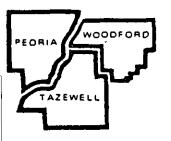
Therefore, we would recommend that our office review the planned activities for potential impacts at the earliest possible point in this study so that cultural resource concerns are incorporated into project design.

If you have any further questions, please contact Paula G. Cross, Staff Archaeologist, Illinois Historic Preservation Agency, Old State Capitol, Springfield, Illinois 62701, 217/785-4998.

Princelely,

Theodore W. Hild Deputy State Historic Preservation Officer

TWH: PGC:kh



TRI-COUNTY REGIONAL PLANNING COMMISSION

632 WEST JEFFERSON STREET MORTON, ILLINOIS 61550-1540 PHONE (309) 694-4391 or (309) 266-9941

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January 31, 1990

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CTION OF NCIES

Colonel John R. Brown
District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division (CENCR-PD-W)
Clock Tower Building P.O. Box 2004
Rock Island, IL 61204-2004

RE: Reconnaissance Study for Illinois Waterway Navigation System

Dear Colonel Brown:

The Tri-County Regional Planning Commission is pleased to submit the attached comments pertaining to the above referenced study.

We shall be glad to provide information or participate to the greatest extent possible to help the study address navigational issues/concerns in the tri-county area.

Sincerely,

Donald G. Meinen Executive Director

DGM:jr

enclosure

Illinois Waterway Navigation Study Comment Sheet - January 31, 1990

The Tri-County Regional Planning Commission is the local Metropolitan Planning Organization for Tazewell, Peoria, and Woodford Counties. The Commission has been actively involved, during the past 32 years, with a multitude of problems and issues concerning water resources within this region and particularly along the Illinois River.

Much has already been written and many reports prepared that address issues ranging from the proposition of duplicate and supplemental locks along the Illinois Waterway to the development of a Comprehensive Master Management Plan for the Upper Mississippi River System which was submitted to the U.S. Congress in 1982.

The Illinois River, and particularly Peoria Lake, is a major water based recreation/conservation area. The siltation problem associated with Peoria Lake and the forecasted loss of that invaluable resource has been very well documented. Peoria Lake is not physically separated from channel activities as are most backwater lakes along the Illinois River, and its shallowness serves to intensify the effects of channel activity. Recreation and commercial users of the waterway vie for the same water areas, making it increasingly difficult and dangerous for water-oriented recreational activities to take place.

The value of the Illinois River system as a fluid highway for transporting commodities and to our nation's welfare is indisputable. With the prospect of increased river traffic there will be a need for more terminals and fleeting sites along the waterway. The Commission has recently contacted the Illinois Department of Transportation about the possibility of developing a fleeting study for the tri-county segment of the Illinois River. Perhaps that study could be expanded to cover the entire waterway and incorporated as part of the Navigation Reconnaissance Study.

The Tri-County Riverfront Plan is now being updated. When completed, it will reveal the good progress that has been made during the past twenty-two years to enhance waterfront areas and what communities are presently doing and planning to do to further develop their waterfront property in order to improve the quality of life for their citizens.

We believe that the Navigation Reconnaissance Study is important and that it should inter-relate with issues, activities, and projects taking place along the waterway and especially within the tri-county portion of the Illinois River/Peoria Lakes. The study should take in consideration the river related programs of the many communities, river-oriented organizations (i.e. Riverfront Forum, Heartland Council, Illinois River Soil Conservation Task Force, etc.) along with state and federal efforts, all of which are working to preserve the multi-faceted attributes of the Illinois River/Peoria Lakes. We encourage the utilization of pertinent data from previous river study reports and the integration of information from plans now underway to help provide a comprehensive reconnaissance study.



HEARTLAND WATER RESOURCES COUNCIL of Central Illinois

Save the Illinois River

5823 Forest Park Drive Peoria, Illinois 61614 (309) 688 Lake (5253)

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Roberta P. Blackwell Peoria Area Chamber of Commerce

Charles M. Blye Tri-County Rivertrant Action Forum

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Byron DéHaan Caterpitar Inc.

Charles Dobbelaire East Peoria City Council

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Area Extension Conservationist
University of Illinois, Region IV

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EX OFFICIO

Dan Roseboom Einois State Water Survey

Richard Sims USDA Soil Conservation Service

HONORARY

ILLINOIS WATERWAY NAVIGATION STUDY

COMMENTS

January 31, 1990

The Heartland Water Resources Council believes that saving the Illinois River and the Peoria Lakes is the key to the future of Illinois' second largest metropolitan area. Water Resources Council, a not-for-profit corporation, was formed in June, 1988 by a group of citizens from Marshall, Peoria, Tazewell and Woodford counties. The Council is governed by a board representing varied interests--public and private. rural and urban, activists and laypeople with the specific purpose of developing a unified, coherent strategy to save the Illinois River and Peoria Lakes as well as coordinating various river and lake saving ideas and managing implementation. Thousands turn to the 20 mile stretch of Peoria Lakes with its expanse for personal recreation activities. Thousands more see the river almost daily from home or office, from parkways and bridges, deriving great joy from its beauty. The Peoria Lakes and the Illinois River is the most pervasive landscape feature of our area.

The Illinois River and Peoria Lakes is a unique resource and life force for its people: carving the bluffs and valleys; refreshing the wetlands and aquifers, capturing and channelling the rain and runoff from hillsides and tributary streams; offering shelter, spawning grounds and feeding area for fish,

wildlife and thousands of other life forms in the ecosystem's web; supplying water for home use, industrial needs, waste dilution and commercial shipping.

Unfortunately, due to soil erosion and the resulting sedimentation, much of the river from Chillicothe to Pekin is due to become a mud flat in ten to fifteen years unless a 90's Action Agenda is adopted and implemented.

The Heartland Water Resources Council, building on the foundation established by previous planning and awareness efforts is developing a 90's Action Agenda to outline a framework for taking actions in a logical sequence leading to, the fulfillment of the goal of saving the Illinois River and. Peoria Lakes. This is a rare opportunity whereby we can define its future.

Action 90's will show the scope of the whole effort, but obviously cannot specify all tasks that actually go into the work. Future action as well as remedial action, funding sources and possible legislative solutions will be presented. We realize that once an action is begun, it generates its own momentum and must be effectively managed with the understanding that none of these solutions are carved in stone. For the most part, the actions that will be proposed can be categorized as sediment input controls, and in-lake sediment controls and water quality control.

We have been working very closely with state and federal government and believe that it is very important and have requested The Honorable Robert E. Michel to add an addendum to

the Navigation Reconnaissance Study to give the United States Army Corps of Engineers the authority to address economic, recreational and environmental concerns within Peoria Lake and that this information be included as part of any recommended feasibility study for Peoria Lock and Dam.

The goals of Heartland Water Resources Council's Action 90's will include:

- 1) Dramatic reduction of the rate of sedimentation by reducing soil erosion and in-flow sediment movement;
- An increase in the depth and volume of Peoria Lakes;
- 3) Enhancement of water quality and protection of our soil: resources as well as enhancement and protection of fish: and wildlife habitat;
- 4) Provision of a permanent watershed steward at the local level:
- 5) The establishment of an Illinois River Basin Commission to coordinate planning and implementation of management programs for the Illinois River.

Thank you for your attention and we will look forward to working with you to preserve the Illinois River for our children and our grandchildren and for their grandchildren, so they can enjoy all of the river's benefits...the fish and wildlife habitats as well as the economic and recreational advantages...that derive from this magnificent and historic stream.

Please join with our efforts to upgrade and effectively manage the Illinois River and Peoria Lakes in this once-in-a-

lifetime opportunity to save something that in essence reflects ourselves, our community and our common future.

Bonnie W. Noble

Bonnie W. Noble, Executive Director Heartland Water Resources Council 5823 Forest Park Drive Peoria, IL 61614 (309) 688-LAKE (5253)



Department of Conservation

life and land together

LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62701-1787 CHICAGO OFFICE • ROOM 4-300 • 100 WEST RANDOLPH 60601 MARK FRECH, DIRECTOR - KATHY SELCKE, ASSISTANT DIRECTOR

Mr. Dudley M. Hanson, P.E. Chief, Planning Division Rock Island District, Corps of Engineers Clock Tower Building - P.O. Box 2004 Rock Island, IL 61204-2004

Dear Mr. Hanson:

Thank you for you March 29, 1990 letter regarding the Corps initiation of a Navigation Improvement Reconnaissance Study on the Illinois Waterway and Upper Mississippi River to determine if Federal involvement is warranted.

I have designated Mr. Richard W. Lutz, Supervisor Impact Analysis Section, Division of Planning as the Point of Contact (POC) for the Illinois Waterway and Upper Mississippi River Reconnaissance Studies. Mr. Lutz will involve other interested Department staff as necessary.

This designation is not meant to change the daily contact that normally occurs between Corps and Department field staff but will provide the Corps one person through whom requests for information, comments or questions can be channeled in a more expeditious manner.

Thank you for the opportunity to comment.

Sincerely,

Mark Frech Director

RWL: ts

The Corps of Engineers has indicated that their mandate from Congress is to provide and maintain a navigable channel of sufficient width and depth along the Illinois Waterway (a 348 mile portion of the Inland Waterway System). In order to accomplish this task, the Corps have constructed, maintain, and operate eight locks and dams. It is a documented fact that these locks and dams have accelerated the rate of siltation in the non-channel portion of the Illinois Waterway.

It has been a practice of the Corps to construct and/or manage sedimentation basins in an attempt to minimize the rate of sedimentation within their navigable channel. It is also the practice of the Corps to dredge their navigable channel, as needed, to maintain the desired width and depth.

While the Corps of Engineers' role is narrow and specific to navigation, it must also recognize the need to mitigate environmental impacts created by their navigation activities. This obligation is consistent with all other federal programs, such as those administered by the Federal Highway Administration.

While the Corps has been addressing (to the degree necessary to satisfy its own goals) the creation and management of sedimentation basins and the dredging, as needed, of their channel, they have totally neglected the natural sedimentation basin provided by the remaining portion of the Illinois Waterway. The rate of siltation caused by the locks and dams and other Corps' activities is both alarming and critical. Significantly negative environmental impacts are being experienced in the following areas:

- 1. Fish and wildlife
- 2. Illinois Waterway ecosystem
- 3. Public recreation
- 4. Municipal, county, and state economic impact involving tourism and development

As the Director of Public Works for the City of Peoria and as a citizen of the City of Peoria, State of Illinois, and the United States of America, I urge the Corps of Engineers to address and mitigate the impacts on the Illinois Waterway created by their various activities to provide year-around commercial navigation facilities within the 348 mile length of the waterway.

In order to do this, the Corps must become accountable for the management of the waterway in total, rather than just the navigation channel. This management must include inflow from Lake Michigan and the management of sedimentation levels within the entire waterway. By not doing so, the Corps is ignoring a significant element of their environmental obligations.

Stephen N. Van Winkle Director of Public Works 419 Fulton Street - #307 Peoria, IL 61602 (309) 672-8536

Congress of the United States House of Representatives Washington, DC 20515-1318

April 2, 1990

Col. John Brown
District Engineer
Corps of Engineers
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Col. Brown:

I would appreciate your exploring the possibility of using Section 1135 authority to modify the ongoing Illinois Waterway Navigation Study to include consideration of the economic, recreational and environmental concerns within Peoria Lake.

Addressing the problems of Peoria Lake remains a top priority in the Peoria area, and it is thus important that this be included as part of the study. Our understanding from the Public Works Committee is that Section 1135 would give you the authority to make this modification, thus enabling us to avoid having to go back through Congress in this regard.

Thank you for your consideration.

Sincerely,

Bob Michel

Member of Congress

RHM:cdk

April 4, 1990

Mr. Dudley Hanson Planning Division U.S. Army Corps of Engineers Rock Island District P. O. Box 2004 Rock Island, Illinois 61204-2004

Dear Mr. Hanson:

I am replying to your letter of March 29, 1990 requesting a point of contact for the environmental studies for the reconnaissance phase of the Illinois Waterway study.

If you feel the studies will involve eventual regulatory issues, such as flow or water level changes which may affect drainage and flooding, changes in diversion from Lake Michigan, channel changes, construction or modification of dams, or impairment of navigation or public uses, then our point of contact will be:

Dave Boyce Chief Floodplain Management Engineer 217/782-3862.

Otherwise, our point of contact for the Illinois Waterway study will continue to be:

Paul Niedernhofer Northern Projects Engineer 217/782-3488.

Thank you for inviting us to participate.

Sincerely,

Donald R. Vonnahme

Director



DEPARTMENT OF THE ARMY

U.S. ARMY ENGINEER DISTRICT; LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

CEORL-PD-C (1110-2-1150a)

18 June 1990

MEMORANDUM FOR Commander, Rock Island District, Attn: CENCR-PD-E, P.O. Box 2004, Rock Island, Illinois 61204-2004

SUBJECT: Preliminary estimate for use of NAVPAT for the Illinois Waterway Navigation Study

- 1. Reference Scope of Work for Navigation Impact Model Coordination (undated) for the Illinois Waterway Navigation Study and funding agreement (DA 2544) accepted by CEORL on May 31, 1990.
- 2. The enclosed estimate for the use of the NAVPAT model for the Illinois Waterway Navigation Study has been developed for the Illinois River from near Grafton, Illinois (approximately Illinois Waterway Mile 0) to Brandon Road Lock and Dam, Des Plaines River (Illinois Waterway Mile 286). The estimate has been prepared so that projected costs for application of NAVPAT can be determined by your office (1) after the number of project alternatives, target years for evaluation, and indicator species are identified or (2) a range of costs can be estimated to bracket possible costs.
- 3. We appreciate the opportunity to develop this manpower and cost information. We are presently assembling the additional information requested in the referenced Scope of Work and it is anticipated that this effort will be completed by the requested date of August 15, 1990.

FOR THE COMMANDER:

Enc1

ROBERT G. FULLER Chief, Planning Division

PRELIMINARY ESTIMATE NAVPAT Application For The Illinois Waterway Study

FIELD MAPPING OF AVAILABLE HABITAT

Field mapping of river bathymetry, substrates, structure, and velocity to a level of detail adequate to describe the entire length of the study area (286 river miles) as contiguous reaches of equivalent habitat. It is estimated that approximately 750 -900 sections may be needed for this 286 miles of Illinois This estimate of 3 or more cross-sections per mile waterway. should represent the maximum amount of ambient habitat condition mapping that may be required for this reach. A field crew of three persons should be able to obtain needed data for 5 to 10 cross-sections per day with an average of seven sections per day a good working estimate. Typical data gathering includes bathymetry cross-section, substrate samples, identification of structure features, and velocity samples. Given the uncertainties that can limit progress in field activities, approximately 125 working days should be allowed for this effort for one crew. The calendar time needed to gather this information can be reduced with more than one crew working at a time but close coordination between crews must be maintained to assure accuracy of data acquisition. An additional crew will not reduce the time by one-half; rather, a 40 percent reduction could be expected. Similarly, three crews working simultaneously will not cut the time needed by one-third of that needed by one crew.

An estimate of funds needed for this effort assuming one crew of three persons, a salary estimate of \$300/person/day (including overhead), 125 working days, and \$70/person/day per diem would equal approximately \$140,000. A contingency of 15 percent is recommended for this estimate.

DEVELOP FLOW WINDOWS

The reach of river mapped will need hydraulic data developed to estimate the stage and discharge for the periods that are of interest for biological species life stage analysis. For example, if walleye spawning would be a species life stage to be modeled, the stage and discharge would be needed for the appropriate time that spawning normally occurs. These stages and discharges will then be used to estimate velocity distribution from bank to bank at a .6 depth. We presently use the ALPHA model (a 1-D model) to develop these velocity values. The representative stages and discharges need not require more than 5

to 10 man days to develop as these values can be obtained from historical data. The development of the velocity values will require additional time, however, as this effort is relatively labor intensive. The time needed is directly related to the number of reaches as a result of the above mapping effort and the number of individual stage/discharge relationships to be developed. Economies of number will be clear with this effort as the first stage/discharge will require development of the bathymetric coordinates for each reach, an effort that will not need to be repeated for additional stages/discharges. One person should be able to enter approximately 25 to 50 reaches per day for the initial file, depending on the experience of the staff with the effort. Additional stage/discharge files can be built by editing the initial file, an effort that can be accomplished at a rate of about 200 to 250 reaches per day.

The bulk of this work would be appropriate for a technician grade employee. An estimate of time required for the Illinois waterway should include approximately 1 professional day for every 4 technician days.

BUILDING THE AVAILABLE HABITAT COMPUTER FILES

A file of the reaches of interest is built for each specific stage/discharge condition. These files are a combination of the field mapped data described above in the first effort, the velocity data developed in the second effort described above, and information from Operations Division staff, industry pilots, and field observations regarding typical limits of tow operation.

The cross-section bathymetry mapped with a recording depthfinder can be entered with a digitizing pad and the information describing each reach (water surface elevation; number of habitat cells; velocity, substrate, and structure appropriate for each cell; and left and right limits of tow operation) using an ORL program called BXSECT. The time needed to enter the data for the first stage/discharge period varies considerably, depending on the accuracy and completeness of the field mapping and knowledge of the river by the person developing the data files. A range of 5 to 10 reaches per day would be appropriate initially. An experienced person should be able to enter an average of 15 reaches per day.

Additional available habitat files can be developed by editing the initial habitat file. These additional files can be developed using the stage/discharge and velocity data described above. An estimate of 50 to 75 reaches per day can be developed for each additional stage/discharge condition to be used for biological analysis.

The construction of the initial file could be developed by a technician but it is highly recommended that at least an equal amount of the effort be accomplished by professional staff for a better understanding of the data input and the characterization of the available habitat for future impact analysis interpretation and for quality control. It is recommended that an estimate of the cost for the first stage discharge file assume 50 percent professional time and 50 percent technician time. The additional stage/discharge files could be developed with a higher percent of technician time (perhaps as much as 70 percent of each effort).

TRAFFIC FREQUENCY FILES

BXSECT automatically subdivides the normal tow operation portion of a river into five equal zones after the left and right limits of tow traffic are established. This is done to allow placement of vessels in a distribution that may be expected due to their horsepower/tow configurations. The flexibility in this allows for a randomness of tow movement to occur within NAVPAT to reflect that tows do not always operate in one specific place in a river.

NAVPAT presently allows up to eight discrete tow horsepower classifications. Each of these eight classes can be distributed over the five zones as appropriate in a percent distribution. Each reach must have a corresponding frequency distribution file. The same file can be used for all stage/discharge conditions or multiple frequency files can be developed. These frequency files can be developed fairly rapidly after the input from knowledgeable individuals is received. It is anticipated that the time to gather frequency input will be primarily professional hours and at least 15 working days should be estimated for the study reach. Once sufficient data becomes available, the files can be built at a rate of 125 to 150 reaches per day (primarily technician time).

ECONOMIC SCENARIO FILES

NAVPAT has been constructed to use traffic event files from many sources, including lock capacity models (such as WAM), system economic evaluation models (such as TOWCOST), and also from records of present lock usage (PMS). Any of these types of traffic records are usable if they contain the following minimum information:

- Time of each vessel arrival or interval between the first and each succeeding vessel.
- Dimensions (length and width) of each tow, with or without towboat.
- Dimensions (length and width) of each towboat or the horsepower of the towboat,
- Whether the tow is loaded or empty (no mixed tows allowed),
 - Whether the tow is upbound or downbound.

The tow traffic input file is built by reading this file and comparing each tow record with matrices developed with best available data to add the following to each tow record:

- Tow speed in feet per second,
- Propeller dimensions for diameter and pitch,
- Propeller revolutions per minute,
- Whether the towboat has an open wheel or kort nozzle.

These matrices are distributions of probable occurrence. It allows factors such as tow speed and prop revolutions to vary somewhat for a given size tows operating in the same direction with similar loads. The use of a minimum number of rules and instead a probability of occurrence increases the input file complexity but provides for an accounting of the variability in tow operation that normally occurs in inland waterway traffic.

The time needed to build the economic scenario files will vary depending on the source(s) of the economic input files. An estimate of time required must also include the number of project alternatives to be analyzed. Further, significant commodity origin or destination ports that significantly increase or decrease the tonnage of commodities on the waterway will result in different economic files needed for various reaches of a waterway.

One of the primary efforts will be to determine the inputs for the matrices used to develop the traffic input files. An estimate of a total of 35 to 40 total person days (perhaps two or more individuals involved in this effort) should be sufficient. The traffic input files are built with a computer program that reads the originating file and the matrices (an ORL program called CONVFLT may be used as a basis) so that additional manpower needs are greatly reduced. An estimate of 3 to 4 person days for the first traffic file and 1 to 2 person days for each additional file for each target year for each project alternative would be appropriate. Should major origin/destination ports be included, additional files will be needed, again 1 to 2 person days for each file.

HYDRAULIC MODELLING OF TOW GENERATED FORCES

Our understanding of forces generated by moving tows is good for main channel and main channel border areas and NAVPAT should be suitable for these areas. Our understanding of flows in areas with islands and in associated side channels and back channels is not nearly as good. We are conducting prototype measurements this summer at two island locations near Louisville but more work is clearly needed. In addition, little work has been conducted on tow induced forces in areas such as Peoria Lake.

In order to address tow induced forces on back and side channels on the Illinois Waterway and areas such as Peoria Lake, scale model studies at a facility such as WES would likely yield the most time efficient and least costly opportunities to gain usable information. In addition, Illinois State Water Survey has conducted some prototype studies at several Illinois River location and their data should be obtained and reviewed. Initially, it is recommended that no major prototype data field effort be started but funds be made available at the earliest possible time to initiate model work.

It is understood that some of these hydraulics work efforts are similar to those proposed in the Plan of Study (POS) for the Melvin Price Locks and Dam (Lock and Dam 26 Replacement). We have been following the progress of the development of this plan and feel that many important areas have been included for study. Our latest information is that the POS has not yet been submitted to higher authority for approval and funding for any work has not been granted. Because of the schedule required for the Illinois Waterway feasibility study, it is recommended that NCR initiate efforts that may be similar to POS work with the assumption that POS hydraulic studies will not be initiated in time to provide data for the Illinois Waterway study. It is estimated that \$100,000 to \$150,000 be considered a range of funds that should be allocated to this work effort and should begin at the earliest possible time.

This above estimate does not include any efforts to add model study results into the hydraulics portions of NAVPAT. At this stage, about 40 person days should be used as an estimate for this additional effort.

BIOLOGICAL MODELS FOR NAVPAT

The biological models for NAVPAT are for a specific species life stage. Species have been divided to this level since past efforts have identified mechanisms of "cause and effect" that indicate potential effects to only one or more life stage of a specific species or effects that may occur with different magnitudes at each life stage for a specific species. ORL has developed 15 species life stage models, some of which would be applicable with minor modifications to the Illinois Waterway. New species life stage models will also likely need to be developed. Efforts were started during early POS discussions (circa 1986-87) but were discontinued. These efforts should be reviewed and models developed as appropriate. For purposes of estimating cost for this effort, it is estimated that an average of about 10 - 15 person days will be needed per species that has an existing model that requires modification (regardless of the number of life stages per species). Similarly, an average of about 30 person days would be a reasonable first estimate for any new species for which a model needs to be developed, again regardless of the number of life stages.

Following completion of model development or modification, approximately 15 - 20 person days should be planned for the incorporation of the model variables into NAVPAT.

EXECUTION OF NAVPAT AND ANALYSIS OF RESULTS

NAVPAT has been developed to run on microcomputers so that execution of the program would not require mainframe computer support and corresponding operating costs. Execution time for NAVPAT on 80386-based microcomputers compares favorably with Harris mainframes that are present in most District offices. Once NAVPAT runs are debugged, batch runs are developed to run overnight and over weekends to maximize machine operation efficiency.

Economies of scale will result with greater numbers of indicator species life stages and project alternatives. Much work needs to be done for a single species life stage that does not need to be repeated for each additional life stage. Since the likely number of each of these is not known at this time, the following estimate should be used as a guide for each alternative assuming about 700 reaches of river:

- for one species life stage (SLS), about \$6,000
- for two to five SLS, about \$8,000 to \$17,500
- for six to ten SLS, about \$21,000 to \$30,000
- for more than 10 SLS, about \$3,000 per SLS.

To illustrate the above estimate, an analysis for the without project condition and three project alternatives and ten SLS would be approximately \$120,000, including time allotted for avoid and minimize analysis, review of possible mitigation measures, and report preparation for inclusion in feasibility reports. For more than three project alternatives, unit costs for each additional alternative would be reduced by about 20 percent.

ORL INVOLVEMENT IN NAVPAT APPLICATION FOR THE ILLINOIS WATERWAY STUDY

None of this estimate presumes that ORL must be involved or conduct all or portions of the above described efforts. There are several of these efforts (including field surveying of available habitat, physical modelling of tow induced hydraulics, actual development of SLS model variables, among others) that would clearly be better accomplished by others. NCR may wish, however, to request ORL support as needed during this study to accomplish specific work items or to provide assistance to NCR with parties assigned efforts. For the following efforts, approximate ORL costs (including travel and per diem, as appropriate) are provided if ORL does not conduct the work activity but NCR wishes ORL assistance:

- Involvement with preparation of economic input files \$16.000.
- Involvement with staff/contractor collecting field habitat data \$19,000,
- Involvement with WES hydraulic modelling \$8,000,
- Involvement with development of species life stage models - \$13,000 to \$20,000, depending on number of new SLS models
- Involvement with building NAVPAT available habitat computer files if ORL does not build them \$8,000,
- -Involvement with NAVPAT application and results analysis if ORL does not run NAVPAT can vary considerably \$10,000 to \$35,000 may be a reasonable range.

APPROXIMATE SCHEDULE FOR THE ABOVE ACTIVITIES

Most of the above major activities be can started as early as funds allow, with each task requiring no more 6 calendar months. The major schedule constraint will likely be the availability of economic scenario information early in the feasibility schedule. This will not preclude the use of NAVPAT.

Availability of information for considered alternatives for economic target analysis years at the earliest possible dates will, however, enhance the ability to conduct avoid and minimize and mitigation analyses. The discussion below indicates task sequencing and overlap. Additionally, the previous estimates should provide a reasonable estimate of the time needed for each activity where it was possible to make estimates.

Mapping of available habitat is the longest single work effort. It is also the only effort that is season and weather dependent. It is recognized that this proposed work is a considerable effort but no meaningful NAVPAT application could be conducted without a good understanding of the river bathymetry and substrates. With appropriate scheduling and funds availability, this work effort should be accomplished in the first 12 months of the feasibility study. This is well before any economic data will be available so this will not likely become a critical path item unless unusual delays develop. It is recommended that completed reaches be available for efforts such as flow window development rather than holding that effort until all sections are mapped. This same consideration is true for building the available habitat computer files.

Hydraulic modelling should be initiated at the outset of the feasibility study. This effort is not weather dependent but may be impacted by projects by other Districts if the work is to be accomplished at WES. It is highly recommended that funds be allocated to this effort due to the uncertainties associated with the Melvin Price Locks and Dam POS.

Flow windows could be initiated as soon as funds are available but need not begin until about 1 month prior to the expected completion of the field habitat mapping. Velocities cannot be projected for project reaches until field data is available for cross-section geometry and substrates for roughness estimates.

Building available habitat computer files can (probably should) overlap with the field data gathering effort. Again, this effort is not season or weather limited.

Traffic frequency files can be initiated as early as funds are available but may be deferred until most of the field habitat mapping is completed. This work item could be completed in the first quarter of the second calendar year of the feasibility study.

Biological models should be initiated early so that habitat mapping includes considerations for a general list of species that may ultimately be included for SLS models. This effort should be completed by the end of the second quarter of the second calendar year of the feasibility study if at all possible. This will allow model testing with available economic data files to determine if any SLS models or model variables warrant further review or modification.

Execution of NAVPAT can occur as economic scenario data becomes available. Execution should not wait until the last alternative is developed. In this manner, avoid and minimize considerations can be incorporated to all alternatives and not be omitted due to lack of time at the end of the feasibility study. Funds can also be programmed more logically over longer periods of time.

Old State Capitol • Springfield, Illinois 62701 • (217) 782-4836

REGIONAL ILLINOIS RIVER Illinois Waterway

IHPA LOG #90010204

27 June, 1990

Dudley M. Hanson, P.E. Chief, Planning Division ATTN: Ken Barr Rock Island District Corps of Engineers Clock Tower Building P.O.Box 2004 Rock Island. IL 61204-2004

Dear Sir:

Thank you for requesting comments from our office concerning the possible effects of the project referenced above on cultural resources. Our comments are required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of listoric Properties".

This letter contains a listing of the types of studies which may be required to determine impacts to significant historic properties pursuant to the National Historic Preservation Act for the Illinois Waterway project. Also included is a listing of National Register structures, sites, and districts within the Illinois Waterway. There are numerous sites that have been determined eligible for listing, but have not been listed on the National Register of Historic Places. A compilation of those eligible but not listed sites is beyond the ability of the IHPA to accomplish in a timely fashion. These records can be made available for inspection to the Corps of Engineers. Please contact Ann Haaker to arrange for record inspection.

The following studies should be considered in planning for the impact on prehistoric and historic archaeological resources.

- 1) River bank survey of the entire length of the river. Such surveys should incorporate the techniques employed by D. Esarey (1989).
- 2) Document the extant shipwrectk resources in the river, and propose methods for their field evaluation.
- 3) Evaluate the potential for deeply buried sites. This would include referencing existing geomorphological studies and conducting new ones where needed to cover the entire river valley and impacted areas of tributaries. Evaluation for buried site potential should include an outline of the methodology to be used for conducting deep testing for archaeological resources.

- 4) Plans should include an evaluation of the impact of erosion to archaeological resources, including resources that are constantly exposed to erosional forces (such as the Zimmerman site) and those that may only occasionally be effected by fluctuating water levels that are associated with maximum flood stages and periodic drawdowns and maintenance activities.
- 5) Address the effect of dredging activities on cultural resources, including the relationship of dredging to bank erosion. The quantity of dredging spoil sites could be predicted and incorporated into a resource evaluation plan.
- 6) Document the potential for historic archaeological sites in the valley. Consult available county atlases, plat maps and local historical societies for extant data on local histories. This research could provide a synthesis of the history of the river, and facilitate the development of models for survey and testing of historic archaeological resources.
- 7) Existing predictive locational models associated with the Illinois River valley should be consulted. Results and suggstions generated by these modles should be evaluated based on any new iniformation generated during the Illinios Waterway Navigation Project.
- 8) Produce a model for evaluating the significance of different types of sites. Certain site types from any given settlement-subsistence system may be found to be very numerous or extremely rare within the Illinois River valley. Understanding each site's function within the settlement-subsistence system, and knowing how those sites and systems are related to the Illinois River and floodplain will be necessary to evaluate the need for additional testing. Site significance models should be produced for all periods of occupation including Paleoindian through Historic periods.
- 9) In addition to archaeological concerns, architectural concerns should be addressed by producing photographs of all standing structures that exist in, over, and around the Illinois River valley, and submitting them to the IHPA for comment and evaluation.

Together, these activities should combine to advance the understanding of the culture history of the Illinois River valley. Furthermore, the significance of the river to the various cultural groups that have lived alongside the river for almost a dozen millenia should be addressed. Finally, the effect that the river has had on the existing archaeological database needs to be included in project plans and activities.

Please find the enclosed publication of those places in Illinois that are listed on the National Historic Register of Historic Places, and the accompanying Additions flyer. Those places that are of concern to the IHPA with regard to the Illinois Waterway project are highlighted in blue. Not all places that may be of concern are highlighted, however. The urban areas in Cook County and the cities of Peoria and Joliet were not assessed, in part due to time constraints, and in part due to a lack of knowledge of the extent of the project study area. The Corp of Engineers is encouraged to identify those places that will be located within the study area. The places marked in the enclosed copies comprise a preliminary and incomplete listing of those places that will require comment by the IHPA.

We look forward to assisting the Corps of Engineers in future endeavors associated with the Illinois Waterway Navigation System study. Feel free to contact Thomas R. Wolforth, Staff Archaeologist, 217/782-9345, concerning archaeology, and Ann Haaker 217/785-5027, concerning historic and architectural resources.

Theodore Hild

Theodore W. Hild Deputy State Historic Preservation Officer

TWH: trw



Telephone (217) 333
Surface Water Se
2204 Griffith
Champaign, Illinois 61820

June 28, 1990

Colonel John R. Brown
District Engineer
U.S. Army Corps of Engineers
Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004
Attention: Planning Division

Ref: Illinois River Navigation Study

Dear Col. Brown:

I would like to thank you, Mr. Dudley Hanson, and Mr. Jon Duyvejonck for sending us a copy of the memorandum on the above topic. Your staff is doing a very good job in gathering and summarizing existing information on the biological changes associated with the navigation on the Illinois River. As you know, we in Illinois are extremely interested in what happens on the Illinois River. Commercial, recreational, and environmental aspects of this great river are very important to the well being, economic growth, and vitality of our state. We would like to be an active partner with you as you develop and formulate the future course or courses of action with respect to the commercial navigation and the environmental health of this river.

We at the Illinois State Water Survey have been investigating the physical changes associated with navigation traffic for a number of years. Our initial involvement was in 1981 when we spent about 16 months studying the changes in sediment resuspension characteristics in the Illinois and Mississippi Rivers due to barge traffic. More recently, we worked for a short time with the Louisville District of the USACOE on the Ohio River on waves, drawdown, and sediment resuspension characteristics due to the controlled experimentation of barge traffic. Recently, we have been collecting field data on the changes in velocity, turbulence, pressure, and sediment resuspension from the Illinois and Mississippi Rivers associated with the barge traffic. Funding for this project was provided by the USFWS with EMP funds through USACOE.

Colonel Brown/2/June 28, 1990

I was Governor Thompson's designated representative on the Hydraulic Team for the preparation of the Plan of Study (POS) for Melvin Price Lock and Dam. Moreover, we were also the primary authors for Work Units 1, 2, 5B, and assisted with other work units for this POS. During the deliberations on this POS, everyone agreed that Work Units 1 and 2 and portions of some other Work Units had to be completed before initiating the remaining Work Units. Work Unit 1 deals with basic physical forces associated with the navigation traffic and Work Unit 2 deals with the sedimentation of the backwater lakes, side channels, and sloughs.

We are also pleased to see that your staff met with the biological scientists from the USFWS, IDOC, USACOE, and our sister agency INHS. I personally know many of these biological scientists and I have a great deal of respect for their expertise and commitment. I am sure their recommendations would be justifiable, timely, and appropriate. I am also delighted to see that these biological scientists believed that the "studies proposed in the POS will be vital for evaluating any navigation improvement on the Illinois River." We of course fully concur with this decision.

We are also familiar with the NAVPAT model and as a matter of fact I have spent sometime discussing this model with the professionals from the USFWS from LaCrosse and personnel from the Louisville District of the USACOE. I should point out that the NAVPAT model was developed for the Ohio River and the differences between the Ohio and Illinois River should be considered in this modeling effort.

We are extremely interested in the Illinois River Navigation Study and would welcome an opportunity to work with your staff in this area. In this connection, may we make the following suggestions for your consideration.

- Recommend that you arrange for meeting between your staff and the hydraulic engineers who have been working on navigation related investigations on the Illinois and Mississippi River. We of course would be glad to participate in such a meeting.
- 2. Request you to include us in future interagency meetings on this specific topic.
- 3. From our previous and present research activity including the participation in the POS for Melvin Price Lock and Dam, we are convinced that the results from the Basic Physical Forces Study, Work Unit 1 of the POS must be conducted in order to determine the physical changes associated with navigation traffic on the Illinois or Mississippi Rivers. These results can then be used to determine the impacts on the biological habitats and sensitive areas, if any.
- 4. In this connection, you may consider participating with the USFWS to broaden the scope of our physical forces study. Please note that at the present we are collecting and analyzing data from only one side of the river because of funding limitations.

Additional resources can be used to expand the basic forces data collection to both sides of the river and also at additional representative sites. We are convinced that such data and the associated analyses would certainly be needed in the preparation of the EIS for Alternatives a, b, c, f and probably g, Attachment 1, of the June 5 memo by Mr. Dudley M. Hanson.

- 5. I am sure you and your staff are fully aware of the fact that there exist significant physical differences between the Illinois, Mississippi, and Ohio Rivers. The Illinois is narrower and shallower and as such any effect of navigation will certainly be felt on the Illinois River before it is felt on the Mississippi or Ohio Rivers. Therefore, for any modeling efforts, these significant differences should be evaluated with appropriate interpretation of the different hydraulic and geometric parameters. Also all the modeling efforts should be calibrated and verified for a complete range of representative reaches before the models are applied in decision making purposes.
- 6. Finally consideration also should be given between variations in sedimentation patterns within the backwater areas and side channels of the Mississippi, Ohio and Illinois Rivers. As you know, many Illinois River backwaters at present have fairly high sedimentation rates. The differences in sedimentation patterns between the three major rivers need to be considered.

We are confident that your able staff will consider all these factors as they start to make determinations toward the preparation of the reconnaissance report. We are ready and willing to work with you in this process as you see it fit.

We hope our comments will be of value to you. If you and your staff would like for us to discuss these matters in any detail, please give us a call. Thank you very much.

Sincerely,

Nani G. Bhowmik Principal Scientist

Naui

Assistant Head of Section

Phone: (217) 333-0238 FAX: (217) 333-6540

bjh

cc: Ken Lubinski, USFWS, EMTC Gail Carmody, USFWS Rodger Adams, ISWS Mike Demissie, ISWS Dick Lutz, IDOC



United States Department of the Interior

Fish and Wildlife Service Rock Island Field Office (ES) 1830 Second Avenue, Second Floor Rock Island, Illinois 61201



In Reply Refer to:

COM: 309/793-5800 FTS: 782-5800

June 28, 1990

Colonel John R. Brown
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

We recently noticed that the Upper Mississippi River and Illinois River Navigation Studies will be discussed at the next meeting of the Inland Waterways Users Board (IWUB). We ask that you consider this meeting an opportunity to foster new relationships between the industry and the environmental community by briefing the Board on the environmental planning requirements that will be necessary for future feasibility studies.

We note that the proposed Methodology for Prioritizing Inland Navigation Investments does not include any natural resource or environmental information. We believe that this provides a skewed picture to the industry and may bias priorities. This bias needs to be avoided on the Upper Mississippi River System which has a dual federal purpose.

One of our recommendations for the Navigation Studies Reconnaissance Reports will be for completion of the proposed St. Louis District Plan of Study. It appears that the majority of the plan can be completed in 5-7 years. Implementation should be before or concurrent with feasibility planning. It is our hope that the plan can be completed in a timely manner and that a repeat of the confrontational history on this issue can be avoided.

We ask that you immediately assess the need for the St. Louis District Plan of Study in completing the proposed navigation feasibility planning. Please also consider accelerating the Plan of Study implementation process, thereby avoiding any future costs of delay. If you would like to discuss these ideas further or would like any assistance in briefing the IWUB, please let me know.

Sincerely,

Richard C. Nelson Field Supervisor

cc: Division Engineers (Gen. Patin, Gen. Williams)
 District Engineers (Col. Corbin, Col. Baldwin)
 U.S. EPA (Regional Administrators)
 Izaak Walton League

GC:sjg

DEPARTMENT OF THE ARMY

ST. LOUIS DISTRICT, CORPS OF ENGINEERS 210 TUCKER BOULEVARD, NORTH ST. LOUIS, MISSOURI 63101-1986 5 July 1990

REPLY TO ATTENTION OF:

Environmental Analysis Branch

MEMORANDUM FOR U.S. Army Engineer District, Rock Island, ATTN: Environmental Analysis Branch, Mr. Jon Duyvejonck, Clock Tower Building, P.O. Box 2004, Rock Island, Illinois 61204-2004

SUBJECT: Illinois Waterway Navigation Study

- Reference Telefax, 6 Jun 90, subject as above.
- 2. We are providing the information you requested concerning the section of Illinois River in the St. Louis District to help you in your preparation of a reconnaissance report on potential navigation improvements.
- 3. Should you require additional assistance, please do not hesitate to contact Mr. Leo G. Nico of our Environmental Analysis Branch at 314/263-5711.

FOR THE COMMANDER:

Encl

JACK F. RASMUSSEN, P.E. Chief, Planning Division

ILLINOIS WATERWAY NAVIGATION STUDY ST. LOUIS DISTRICT - LOWER ILLINOIS RIVER (ALTON POOL)

Prepared For: Planning Division Rock Island District

Originating Office: Environmental Analysis Branch Planning Division St. Louis District

JULY 1990

ILLINOIS WATERWAY NAVIGATION STUDY

ST. LOUIS DISTRICT - LOWER ILLINOIS RIVER (ALTON POOL)

Table of Contents

Item			Page
ı.	Introdu	ction	. 1
II.	Navigat	ion Problems and Locations	1
	Α.	Sedimentation	1
	В.	Bankline Erosion	3
	c.	Other	4
III.	Bathyme	tric Data	4
IV.	Environ	mental Resources	4
	Α,	Mussel Beds	4
	В.	Heron Rookeries	6
	c.	Wetlands	6
	D.	Fishes and Fisheries	7
	E.	Waterfowl	7
v.	Endange	red and Threatened Species	8
	Α.	Federal	. 8
	В.	State	9
VI.	Environ	mental Management Program	14
VII.	Ongoing	Studies	15
	Α.	Plan of Study	15
	В.	Other Ongoing Studies	16
VIII.	Literat	ure	16

List of Tables

Table		Page
1	Lower Illinois River dredging records for three 10-year periods	1
2	Locations of lower Illinois River mussel beds	5
3	Type and amount of wetlands and deepwater habitats in the Illinois River floodplain from river mile 0 to 80 (Alton Pool)	7
4	Federal endangered and threatened species occurring or possibly occurring in or along lower Illinois River	8
5	1989 Boltonia decurrens census	9
6	Vertebrate animals listed as Illinois state endanger and threatened species and reported from areas or counties along lower Illinois River (river miles 0 to 80)	ed 11
7	Plants listed as Illinois state endangered and threatened species and reported from areas or counties along lower Illinois River (river miles 0 to 80)	12
	List of Figures	
Figure		Page
1	Net cross sectional area change in the Illinois River between miles 2.3 and 79.12 in the period 1947-49 to 1977	2
2	Distribution of Boltonia decurrens	10

I. Introduction

The U.S. Army Corps of Engineers, Rock Island District, is preparing the Illinois River Navigation Study reconnaissance report. The following document provides information concerning the section of Illinois River in the St. Louis District to assist in the preparation of that reconnaissance report.

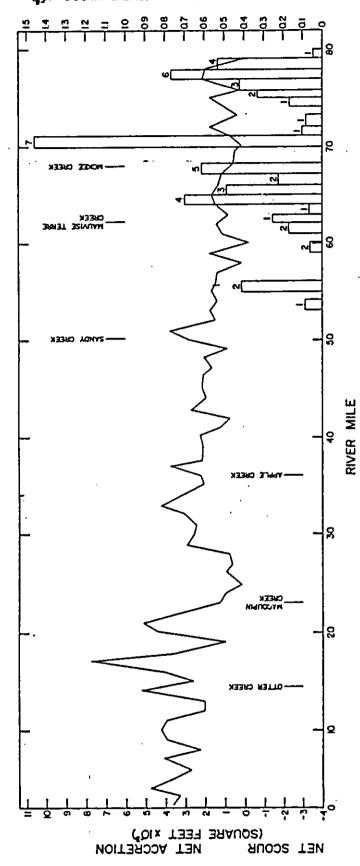
II. Navigation Problems and Locations

A. <u>Sedimentation</u>. Sedimentation is considered the most serious problem affecting navigation on the lower Illinois River. The increase in dredging requirements during recent years (Table 1) indicates that the inflow of material coming into the system exceeds the bed load transport capabilities of the system. If allowed to continue, the input of sediment could have a very severe impact upon the future navigability of the waterway. The dramatic increase in dredging requirements, especially 1968-1978, strongly suggests the possibility that poor land use practices is the main cause of the problem. The decline in dredged material moved during the 1978-1988 period compared with the 1968-1978 period may be related to drought years which require less dredging because the river moves less sediment. In the lower Illinois River the material dredged during channel maintenance is placed in the river usually near the shore or along the navigation channel in selected areas.

Table 1. Lower Illinois River (river miles 0 to 80) dredging records for three 10-year periods.

		<u> </u>	
From	То	Cubic Yards Dredged	Number of Cuts
1958	1968	2,418,362	21
1968	1978	7,517,577	52
1978	1988	3,974,805	39

In the early 1980's the St. Louis District commissioned a study to assess the status of navigation on the Illinois River between river miles 0 and 80. As an initial effort in the plan of study, cross sectional area comparisons were made of surveys done in 1902-04 and 1947-49 with the 1977 hydrographic survey. Results of that study show that the rate of accretion of sediments to the lower 80 miles has accelerated and that the sources of the sediment are from above LaGrange Lock and Dam and from tributary watersheds below LaGrange Lock and Dam (Westphal 1983). Figure 1 from that study gives the net cross sectional area change in the Illinois River between river miles 2.3 and 79.1 in the period 1947-49 to 1970. It shows that during this period the entire reach (except for one cross



Net cross sectional area change in the Illinois River between miles 2.3 and 79.12 in the period 1947-49 to 1977. (Sourcé: Westphal 1983) Figure 1.

section near river mile 60.1) experienced a net accretion. Also shown as a bar graph on the right side of Figure 1 are volumes of sediments dredged (and number of dredge cuts) over the period 1947-49 to 1977 and the approximate river locations where the dredging occurred. The most intense activity during the period was from river mile 70 to river mile 71.2 where 1.47 million cubic yards were dredged.

With data presently available, the relative contributions from the source areas cannot be determined nor can the magnitude of the problem be assessed in such a manner that economic control measures can be devised. Westphal (1983) recommended several actions preliminary to development of engineering measures to control accretion of sediment to the river. In brief, these recommendations were: 1)inventory of land use practices on tributary watersheds; 2)inventory of channelization and levee projects on tributary watersheds in relation to their influence on sediment influx to the river; 3)periodic survey of channel section between river miles 70 and 80 over 1 or 2 years to measure the response of the channel to releases from LaGrange Lock and Dam; and 4) a program undertaken to evaluate the relative contributions of sediment from tributaries.

Simons et al. (1988) includes data on the lower Illinois River in their analysis of sediment resuspension by towboats. As part of that study, McEvers Island Slough (river mile 49.6) on the Illinois River was used as one of the models to examine side channel aggradation of sediments. They concluded that the impact of towinduced sediment resuspension on side channels of the Illinois and Mississippi Rivers is insignificant.

- B. <u>Bankline Erosion</u>. Presently, the lower Illinois River is suffering from bankline erosion or bank caving in many areas. Although considered minor compared to the impact of sedimentation carried into the lower river from other sources, bankline erosion is a contributing factor in decreased depth as well as a source of sediments, both of which contribute to a degradation in channel conveyance.
- The St. Louis District classifies areas of bankline erosion into three general categories or priorities:
- I) Significant bankline erosion adjacent to flood control structures;
- II) Significant bankline erosion not adjacent to flood control structures; and
 - III) Minor-to-moderate bankline and island erosion.

SLD personnel taking part in an Illinois River inspection trip on 29 April 1987 identified 8.2 miles of bankline as Priority I, 17.85 miles as Priority II, and 9.2 miles as Priority III. River miles and bank of Priority I sites were as follows: 4.6-5.5 R, 9.3-

9.9 R, 10.25-10.4 R, 17.9-18.6 L, 22.9-23.0 L, 27.5-27.8 L, 28.8-29.3 R, 43.1-43.15 R, 43.1-43.5 L, 51.8-52.7 L, 55.9-56.4 L, 59.5-60.1 L, and 61.0-61.1 R.

C. Other. Additional information on problems on the Illinois River related to navigation can be found in COE (1988). For example, Appendix EIS-D, Volume II, of that document gives information on vessel and facility spills including projections into the future.

III. Bathymetric Data

According to Claude Strauser, chief of the St. Louis District's Potamology Section, bottom surveys of the lower Illinois River are fairly frequent. The most recent was carried out in 1988-89. Cross sectional readings are normally taken every 1,000 feet at the same locations of past surveys for the purpose of comparison.

IV. Environmental Resources

A. Mussels and Mussel Beds. A total of 41 species of mussels have been recorded from the lower 80.2 miles of the Illinois River and its bottomland lakes since 1870 (Starrett 1971: 385), but during the last 80 years that number has been significantly reduced. For example, Starret (1971) recorded only 20 live species in 1966-1969 in the Alton Pool reach of the river. The elimination of many of the mussel species is most likely the result of domestic and industrial pollution, and to some degree by increased sedimentation (Mills et al. 1966, Starrett 1971). Those species that presently occur are hardy mussels adapted to a history of turbid conditions and rather poor water quality. None of the 20 recently recorded species is on the Federal or State list of Endangered and Threatened species. The Higgins' Eye Pearly Mussel (Lampsilis higginsi), a Federally endangered species, was probably extirpated from the Illinois River before 1930 (Starrett 1971, Havlik 1981). Additional information on mussels can be found in COE (1988). Current studies on the physical effects of increased commercial navigation traffic on mussels in the Upper Mississippi River (see Miller et al. 1990) do not include sites on the Illinois River.

The Illinois River has been an important source of mussel shells, and most commercial collecting on the river is done in its lower reaches. Starrett (1971: 390) listed the locations of 36 mussel beds in the lower 80.2 miles which were commercially fished during 1966 (Table 2), a year when the total catch from the Illinois River was high (1,118 tons). His 1966 study was the last survey of mussels that included the entire lower Illinois River. More recent field investigations have been restricted to contract work involving relatively small areas of river (e.g., WAPORA 1979, Anderson 1981, several small studies by D. Blodgett, Illinois Natural History Survey, pers. comm. 1990). In addition to documenting a few new

beds in the lower Illinois River, these recent studies documented size reductions and extensions of some of the beds previously identified by Starrett. Although the Illinois Department of Conservation keeps records of the total annual harvest of mussels from the Illinois River, they cannot break their data down by pool.

Table 2. Locations of lower Illinois River (river miles 0 to 80) mussel beds fished by commercial fishermen in 1966 (from Starrett 1971: 390) and beds reported by WAPORA (1979) and Anderson (1981).

River Mile	River Bank	River Mile	River Bank
0.3-2.0	Left	54.0-54.7	Right
5.0-5.5	Right	55.9-56.4	LeŤt
10.3-10.5	Right	57.8-59.1	Right
13.2-13.5	Right	60.4-61.5	Right
14.5-14.7	Left	- 61.8-**	Left**
14.9-15.1	Right	62.1-62.6	Right
19.0-19.5	Right	63.8-64.5	Right
23.2-23.5	Right	65.9-66.5	LeŤt
24.2-24.4	Left	66.4-68.5*	Left*
27.7-27.9	Left	66.6-66.9	Right
28.1-29.5	Right	66.7-77.1*	Right*
30.5-31.3	Right	68.1-68.5*	Right*
33.0-33.5	Right	68.5-68.7*	Right*
37.3-37.6	Right	68.8?~68.9*	Right*
39.1-39.3	Right	68.9-69.4	Right
40.1-10.8	Right	72.5-72.7*	Right∻
41.2-42.4	Left	73.5-73.6*	Right*
44.0-44.9	Right	72.6-74.3	Right
45.2-47.7	Left	74.1-74.6*	Right*
46.8-47.7	Left	74.5-75.1	Left
48.0-48.9	Right	75.2-75.8	Right
50.7-51.5	Right	79.0-79.9	Right
53.0-53.9	Left	·	J

^{**} Anderson (1981) mussel survey near river mile 62 (incomplete). * WAPORA (1979) mussel survey river miles 66.0-75.1.

⁽Note: Starrett data presented here were not modified to show losses or additions indicated by more recent localized surveys)

B. Heron Rookeries. There are only two heron rookeries in the lower Illinois River currently known to be active (V. Klein, Illinois Department of Conservation, pers. comm., 1990). The first site, consisting of somewhere between 150 to 250 great blue heron nests, is located near Meredosia Lake in Cass County. The second active rookery is on Island 525 near the confluence of the Mississippi and Illinois rivers, Calhoun county. The island has at least 400 nests, maybe as many as 800, consisting of great blue herons and great egrets.

Graber et al. (1977) reported on two post-1955 nest colonies in the lower Illinois River, a great blue heron rockery near Nutwood in Calhoun county and nests of black-crowned night herons near Naples, Scott county. Both of these sites were active in the early 1970's but apparently abandoned by 1977. Nevertheless, additional active rockeries may be present in the lower Illinois River that have not as yet been identified due to a shortage of updated information. For example, recent aerial bird surveys of the river have not covered the tiver downstream of Meredosia near river mile 71. Furthermore, nests of some of the smaller herons are difficult to locate from the air (V. Klein, Illinois Department of Conservation, pers. comm., 1990).

C. Wetlands. Havera (1985), in his recent report on the status of waterfowl in Illinois, made an inventory of the wetlands and deepwater habitats of the state by analysis of available maps and aerial photographs. He identified 39,253 acres of wetland habitat in the Illinois River floodplain from river mile 0 to 80. Most of these wetlands were found close to the mouth. Table 3 shows the types and areas of wetlands reported by Havera for the lower Illinois River based on the classification procedures of Cowardin et al. (1979).

Overall, many wetlands in the Illinois River valley have disappeared or been changed and degraded. Of special concern is the filling in of wetland areas by sedimentation (see Lee and Stall 1982, Bellrose et al. 1983, Sparks 1984, Cahill and Steele 1986). The increased rate of sedimentation has had a negative effect on wetlands with aquatic plants by generating turbidity and by creating bottoms too soft for anchorage when plants are subjected to wave forces and fish action (Mills et al. 1966). Consequently, since the middle 1950's aquatic vegetation has disappeared from many wetland areas in the Illinois River valley (Havera 1985: 537). Sedimentation has also reduced the habitat diversity of the lakes and side channels along the river by making areas shallow and creating rather uniform bottoms. One positive aspect of sedimentation in regard to wetlands is the increase in the area of mud flats along the shorelines of the lowland lakes (Havera and Bellrose 1985)

Table 3. Type and amount of wetlands and deepwater habitats in the Illinois River floodplain from river mile 0 to 80 (Alton Pool). (source: Havera 1985: Table 146, p. 531).

Type	Number of Acres	Percent total
Open Water		
Lakes (> 20 acres)	3,759	9.6
Ponds & slough (< 20 acres)	737	1.9
River	9,807	25.0
Subtotal	14,303	36.4
Submergent & floating vegetation	72	0.2
Emergent vegetation	684	1.7
Moist-soil plants	2,065	5.2
Sand bars/mud flats	1,880	4.8
Scrub-scrub	892	2.3
Bottomland forest	19,190	48.9
Flooded dead timber	24	0.1
Ag-land flooded for waterfowl	6	0.0
Drainage ditches	137	0.3
Total	39,253	100.0

- D. Fish and Fisheries. In the past, the Illinois River was one of the most important sources of commercial fish in the United States (Sparks 1984). Current information on the commercial fish harvest of the Alton Pool section of the Illinois River can be obtained from Bill Fritz of the Illinois Department of Conservation. Other useful sources of information on fishes in the Illinois River include Mills et al. (1966), Sparks and Starrett (1975), Smith (1979), Sparks (1984), Havera and Bellrose (1985) and COE (1988).
- E. Waterfowl. The Illinois River valley, as part of the Mississippi flyway, is used extensively by migratory waterfowl. In addition, wood ducks and mallards currently nest in the lower sections of the floodplain (Havera 1985). A report on the management and status of waterfowl in Illinois by Havera (1985) is perhaps the most comprehensive and relatively recent work which presents significant data on the waterfowl and their habitats in the lower Illinois River. That report is based primarily on aerial surveys carried out by the Illinois Natural History Survey 1948-1985. Declines are documented for a number of duck species using the Illinois River valley, including mallards, scaup, and canvasback. These changes are most likely the result of the degradation of wetlands by sedimentation and water pollution which have affected the abundance of aquatic plants and other natural waterfowl foods such as fingernail clams (Sphaeriidae) (Mills et al. 1966, Bellrose et al. 1979, Sparks 1984, Havera 1985).

V. Endangered and Threatened Species

A. Federal. Table 4 provides a listing of the Federal endangered and threatened species that occur or possibly occur in the lower Illinois River valley. The listing was verified during a telephone conversation on 28 June 1990 with Bruce Stebbings of the U.S. Fish and Wildlife Service. Appendix EIS-B, Volume II, of COE (1988) gives detailed information on the ecology and life history of the listed species including scientific references.

The only record of possible breeding by bald eagles in recent years in the lower Illinois River valley is a report of a nesting attempt by bald eagles in Pike County around 1987 along a creek and farm field of the Illinois River. However, the breeding pair was apparently unsuccessful and the site was abandoned (Glen Kruse, Illinois Department of Conservation, pers. comm., 1990).

The most recent information on the threatened plant <u>Boltonia</u> <u>decurrens</u> can be found in the draft recovery plan (USFWS 1990) which is being coordinated by Thomas Keevin of the St. Louis District. The present known distribution of the species is given in Table 5 and Figure 2 both taken from the draft recovery plan.

Table 4. Federal endangered (E) or threatened (T) species occurring or possibly occurring in or along lower Illinois River.

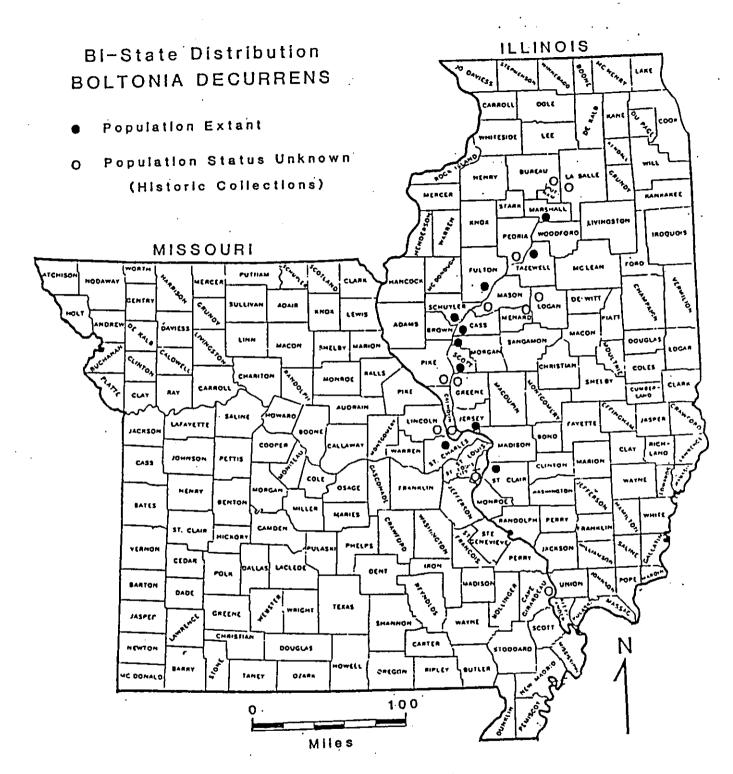
Name	Habitat	County
Animals:		
Gray Bat (E) Myotis grisescens	Caves	Pike
Indiana Bat (E) <u>Myotis</u> <u>sodalis</u>	Caves and Riparian Habitat	Statewide
Bald Eagle (E) Haliaeetus	Breeding?	Pike
<u>leucocephalus</u>	Wintering	Brown, Calhoun Cass, Greene, Jersey, Morgan, Pike, Scott
Plants:		Tike, Scott
Decurrent False Aster (T) Boltonia decurrens	Lowlands	Cass, Jersey, Morgan, Scott

Table 5. 1989 Census of Boltonia decurrens.

Illinois County	Area	Location .	Size
1)St. Clair	Fairmont City	Cen SE 1/4 Sec 5	3
2)Jersey	Gilbert Lake	NE 1/4 Sec 14	59
3)Scott	Smith Lake	NW 1/4 Sec 6 T15N R13W	50
4)Morgan/Cass	Meredosia Lk	East Shore	>2,000
5)Morgan	Meredosia Lk	SW Shore, SW 1/4 S9 T2S R2W	20
6)Cass	Illinois River	E bank at mile 75.6	2
7)Schuyler	Frederock	Borrow pits river Rd.	>2,000
8)Schuyler	Browning	River Rd. & parking lot	53
9)Schuyler	Sangonois	Access Rd. and lot	50
10)Schuyler	Long Lake	Sec. 16 N of lake	36
11)Fulton	Anderson Lake	Borrow pit N of campground	30
12)Fulton	Rice Lake	N Ag. field and vicinity	>4,000
13)Tazewell	Cooper Park N	SE of parking lot	61
14)Marshall	Brown Run	NW 1/4 Sec 18 T2W R30N	10
15)Marshall	Billsbach Lake	Cen Sec 8 T13N R10E	6
16)Marshall	Sparland C A	W shore Goose Lake	2
17)Marshall	Apple Knob	Cen SW 1/4 Sec 4 T13N R10E	36

(source: USFWS 1990)

B. <u>State</u>. Tables 6 and 7 give listings of the State endangered and threatened vertebrate animal and plant species, respectively, that occur or possibly occur in the lower Illinois River valley.



Modified from Morgan (1980) and Kurz (1981)

Figure 2 (Source: USFWS 1990)

Table 6. Vertebrate animals listed as Illinois state endangered (E) or threatened (T) species and reported from areas or counties along lower Illinois River (river miles 0 to 80).

Common Name	Scientific Name	County	Habitat
Spotted Sunfish (T)	Lepomis punctatus	Cass?	Bottomland lakes and swamps along middle Illinois River valley
Illinois Mud Turtle (E)	Kinosternon flavescens	Morgan, Cass	Sand areas with ponds and sloughs
Illinois Chorus Frog (T)	Pseudacris streckeri	Cass, Morgan	Open sandy areas of river lowlands
Western Hognose Snake (T)	Heterodon nasicus	Morgan	Dry areas, sand prairies
Great Plains Rat Snake (T)	<u>Elaphe</u> guttata	Jersey	Open woodlands, rocky, wooded hillsides
Great Egret (E)	Casmerodius albus	Calhoun?	Along major rivers
Bald Eagle (E)*	Haliaeetus leucocephalus	Brown, Calhoun Cass, Greene, Jersey, Morgan, Pike, Scott	Along major rivers and large reservoirs
Upland Sandpiper (E)	Bartramia longicauda	Greene	Pastureland, hayfields, short prairie
Bewick's Wren (E)	Thryomanes bewickii	Jersey	Open areas near open woodlands and
Yellow-headed Blackbird (E) <u>Xanthocephalus</u> <u>xanthocephal</u>	<u>Xanthocephalus</u> <u>xanthocephalus</u>	Cass	Marshes with open water
Gray Bat (E)*	Myotis grisescens	Jersey	Caves
Indiana Bat (E)*	Myotis sodalis	Morgan, Pike	Caves and riparian habitat
Bobcat (E)	Lynx rufus	Calhoun	Heavily wooded areas
Listing derived from IESPB and mammals, and Smith (197	from IESPB (1989) based on range ma Smith (1979) for fish. Asterisk (*	maps given in NLI (*) indicates Feder	NLI (1981) for amphibians, reptiles, birds, Federally listed species.

Table 7. Plants listed as Illinois state endangered (E) or threatened (T) species and reported from areas or counties along lower Illinois River (river miles 0 to 80).

Common Name	Scientific Name	County	Habitat
Long Beech Fern (E)	Thelypteris phegopteris	Cass?	Moist, shaded sandstone cliffs
Small Burhead (E)	Echinodorus tenellus	Cass	Sand regions along Illinois River
Prairie Spiderwort (E)	Tradescantia <u>bracteata</u>	Jersey? Greene? Morgan?	Dry pairies, sand areas, and disturbed areas
Vahl's Fimbristylis (E)	Fibristylis vahlii	Cass	Wet sandy depressions, Illinois River Sand Areas Section
Mottled Lipocarpha (E).	<u>Lipocarpha</u> maculata	Cass?	Edge of sand ponds in Illinois River Sand Areas Section
Bulrush (E)	Scirpus hallii	Cass	Shallow ephemeral ponds
Bulrush (E)	Scirpus smithii	Cass?	Muddy and sandy pond margins
Netted Nut Rush (E)	Scleria reticularis	Cass?	Peaty sands of pond margins in Illinois River Sands Section
Wood Orchid (E)	Habenaria clavellata	Cass?	Mesic sand prairies adn thickets
Salt Meadow Grass (E)	Leptochloa panicoides	Calhoun	Wet Shores, marshes, and ditches, known from site at mouth of Illinois River
Hairy Bead Grass (E)	Paspalum bushii	Cass?	Xeric prairies
Yellow Cress (E)	Rorippa truncata	Cass?	Wet shores and in floodplains

Counties where species formerly Source: derived from IESPB (1989) based on range maps given in NLI (1981). occured but not presently known to be extant followed by question mark (?).

Table 7 (continued). Plants listed as Illinois state endangered (E) or threatened (T) species and reported from areas or counties along lower Illinois River (river miles 0 to 80).

Common Name	Scientific Name	County	Habitat
Arrowwood (E)	Viburnum molle	Brown?, Pike	Wooded hillsides and limestone bluffs
Heart-leaved Plantain (E)	Plantago cordata	Cass?	Shallow, clear-water streams with sandy or gravelly bottoms
Pink Milkwort (E)	Polygala incarnata	Cass?, Morgan	Sand and gravel prairies and dry open sites
Bulrush (T)	Scirpus polyphyllus	Brown	Open and woody seeps
Grass-leaved Lily (T)	Stenanthium gramineum	Pike?	Rich mesic forests and floodplains
Green Trillium (T)	Trillium viride	Pike?	Forested bottomlands, slopes, blufftops, and prairies
Tubercled orchid (T)	Habenaria <u>flava</u> var <u>herbiola</u>	Cass?	Mesic peaty sand prairies and thickets
Narrow-leaved Green Milkweed (T)	<u>Asclepias stenophylla</u>	Calhoun Pike	Loess hill prairies and limestone glades along Mississippi River bluffs
False Tarragon (T)	Artemisia dracunculus	Cass?, Morgan?	Loess bluffs along Illinois River
Patterson Bindweed (T)	Stylisma pickeringii	Cass?	Dry sandy soil and sand prairies, sand areas of Illinois River
Source: derived from IESPB	derived from IESPB (1989) based on range maps given in NLI (1981).		given in NLI (1981). Counties where species formerly

VI. Environmental Management Program

There are currently four projects in the lower Illinois River being developed as part of the Upper Mississippi River System Environmental Management Program.

- 1. Calhoun Point Fish and Wildlife Management Area, Illinois. This area includes about 2,300 acres located at the confluence of the Mississippi and Illinois rivers. The project is to provide low levees in order to rehabilitate and enhance the wetland and aquatic habitats of the area.
- 2. Swan Lake, Illinois. Swan Lake consists of about 2,400 acres of the Mark Twain National Wildlife Refuge along the west bank of the Illinois River between river miles 5 and 10. This project consists of constructing low dikes and pumping facilities to restore prime fish and wildlife habitat. Selected plan expected to be completed during July 1990 and draft Definite Project Report to be completed in August or September of 1990.
- 3. Stump Lake Complex, Illinois. The Stump Lake Complex is situated along the east bank of the Illinois River between river miles 8 and 12. It is part of an extensive fish and wildlife management area, administered by the state of Illinois under a cooperative agreement with the U.S. Fish and Wildlife Service. The project consists of constructing a system of low levees in order to improve the capability for manipulating water levels in the 1,035 acre wetland portion of the complex. Draft Definite Project Report is in preparation and is expected to be sent out for review in August 1990.
- 4. Alton Pool Side Channels, Illinois River. The lower 80 miles of the Illinois River is influenced by backwater from the Alton Pool (Pool 26). The areas of concern are adjacent to the following islands: Wilson's (rm 73), Meredosia (rm 69), Big Blue (rm), McEver's (rm 49), Buckhorn (rm 46), Wing (rm 40), Spar (rm 39.5), Fisher (rm 38.5), Twin (rm 38), Willow (rm 30.5), Crater (rm 29), Hurricane (rm 26-28), Diamond (rm 24), Mortland (rm 18-19.5) and Twelve Mile (rm 12.5-14). The project would provide for the installation and construction of various erosion control measures in each of the listed side channels in order to improve the fisheries resource. Hydraulic surveys expected to begin during Fiscal Year 1990.

VII. Ongoing Studies

This section discusses ongoing studies that may affect navigation studies on the Illinois Waterway.

A. Plan of Study.

- 1. Affect of Navigation Studies on Illinois River. In essence, the proposed Plan of Study will provide a way to identify and quantify impacts to significant resources resulting from navigation traffic not only on the Mississippi River, but on the Illinois River and other tributaries as well. However, the Plan of Study represents a proposed course of action and has not, at this time, been fully reviewed or approved by the Corps' reviewing offices. Although some of the proposed investigations of the Plan of Study would be carried out in the lower Illinois River, specific field study sites have yet to be agreed upon.
- 2. <u>Background</u>. In preparing the Environmental Impact Statement for the second lock at the Locks and Dam 26 replacement facility it became evident how little was known regarding the hydraulic and biological impacts of commercial and recreational traffic on the river system. To develop a plan to overcome those data gaps, an interagency team was formed consisting of representatives from the Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the five states bordering the Upper Mississippi River.

The Plan of Study objective adopted by the interagency team is as follows: "The Plan of Study will develop studies which identify and quantify impacts to significant resources within the Upper Mississippi River System resulting from navigation traffic in cases where such impacts are currently poorly defined due to a lack of scientific data. Where possible, studies will attempt to quantify the impacts associated with that increment of traffic caused by the second lock. Where feasible within the constraints of time and money, studies will attempt to quantify effects of recreation craft in addition to those of commercial tow."

The Study Team for the Plan of Study identified and prioritized the proposed studies in the Upper Mississippi River: 1) Basic physical forces study; 2) Effects of traffic or sedimentation of sidechannels and backwaters; 3) Navigation impacts on early life stages of fish; 4) Impacts to mussels in main channel and main channel border; 5) Physical and biological effects of traffic in backwaters; 6) Navigation impacts to adult fish in main channel/main channel border; 7) navigation induced drawdown effects on fish larvae and eggs; 8) Navigation impacts of suspended sediments on aquatic macrophytes; 9) Navigation effects to macroinvertebrates on rock substrates; 10) Effects of navigation hazing on migrating waterfowl; 11) Effects of navigation induced shear and turbidity on algal growth; 12) Navigation effects on commercial fishing; 13) Effects of navigation induced turbidity on growth of sight feeding fishes; 14) Data management and mathematical modeling for impact extrapolation; and 15) navigation induced development of the Upper Mississippi River floodplain.

B. Other Ongoing Studies. Other ongoing studies that may affect navigation studies in the lower Illinois River include the EMP projects which were discussed in Section VI. A few scientific investigations that include the lower Illinois River can be found in a report by the UMRCC (1990).

VIII. Literature on the Lower Illinois River

The following is a selected listing of literature on the lower Illinois River. All the literature cited in this report are included here as well as some additional works that may be of importance. More recent reviews or reports that may be most useful are indicated with an asterisk (*).

Anderson, R. V. 1981. Study of molluscs and aquatic invertebrates in the areas of the proposed Illinois River bridge and corridors for the Central Illinois Expressway (FAP 408). Report prepared for Illinois Department of Transportation. Western Illinois University.

Bellrose, F. C., S. P. Havera, F. L. Paveglio, Jr.,, and D. W. Steffeck. 1983. The fate of lakes in the Illinois River valley. Illinois Natural History Survey Biological Notes No. 119. 27 p.

Bellrose, F. C., F. L. Paveglio, Jr., and D. W. Steffeck. 1979. Waterfowl populations and the changing environment of the Illinois River valley. Illinois Natural History Survey Bulletin 32(1): 1-54.

Cahill, R. A., and J. D. Steele. 1986. Inorganic composition and sedimentation rates of backwater lakes associated with the Illinois River. Environmental Geology Notes 115. Illinois Department of Energy and Natural Resources, State Geological Survey Divivsion, Champaign, Illinois. 61 p.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST. CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

Colonel John Brown
District Engineer
Department of the Army, Corps of Engineers
Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Brown:

We have reviewed the preliminary information provided by your staff for reconnaissance report for the Illinois River Navigation Study. The purpose of the reconnaissance report is to determine the scope of study for the feasibility study. Our Agency understands that a similar report is planned for the Upper Mississippi River System. That particular study will be addressed under a separate letter at a later date. This letter reflects our concerns and recommendations for the navigation study for the Illinois River. These concerns and recommendations consist of data availability, Plan Of Study (POS) for Lock and Dam 26, NAVPAT model, and NEPA compliance.

Our Agency has serious concerns that the navigation study will proceed without a master plan to fully assess the environmental impacts of the recommended action. Because there is a potential for change in river management, the feasibility study must have the ability to assess all the impacts that may occur. environmental concerns that need to be evaluated are sedimentation, decline in aquatic vegetation, erosion, and loss of aquatic and wildlife habitat. The gathering of data that is needed to assess these impacts is vital. This information is necessary so that the decision will be made with the full understanding of the environmental consequences of the preferred actions. Without these studies, your agency's decision would be based on speculation and interpretation of the affects of present navigation practices on the Illinois River system. The change in operations on the Illinois River will have longterm impacts on the river's ecosystem. Because of this, it is important that a conscious effort be made to gather, analyze, and evaluate the necessary environmental information. This data will provide your agency the ability to evaluate alternatives, and determine the adverse impacts that would occur due to the change in river navigation management. This assessment will provide the basis of the development of strategies to minimize impacts, and develop mitigation plans. In addition, this knowledge will allow for the differentiation of the actions that are actually enhancement rather than mitigation.

We agree that the POS for Lock and Dam 26 is essential part to this navigation study. However, the navigation study cannot rely solely on this POS. As it stands now, the POS for Lock and Dam 26 will provide limited data due to the proposed time frames. The responsibility to gather this information must be administrated by your agency. The decisions that will effect the Illinois River must be made with sufficient knowledge and understanding of the consequences. If the proposed POS for Lock and Dam 26 is not implemented within the next year, that information will not be available for this navigation study. Your agency must make efforts to develop independent studies that will provide the required data. Consideration of the merits of developing and implementing a master POS for the Illinois River, before the feasibility study is completed, should be evaluated.

It is our understanding that the document for the NAVPAT model is being written. Our Agency cannot support the proposed use of the NAVPAT model until we have had the opportunity to review the documentation. After having an opportunity to review and assess the merits of this model, we will be able to determine to what degree this model should be utilized.

We recommend that the feasibility study and Environmental Impact Statement address the entire river system. For individual projects, we encourage separate NEPA documents to assess the incremental impacts. This tier structure would provide the opportunity to assess both the impact on a system wide basis, with a follow up that would provide site orientated details. The systematic documentation should also include a section that discusses the impacts the Mississippi River navigation practices will have on the Illinois River.

Thank you for the opportunity to provide comments on the Reconnaissance Study for Illinois River Navigation Study. Our Agency is willing to meet to discuss our concerns. Please keep us informed of future meetings regarding the Illinois River Navigation Study. We look forward to participating in the development of study. Our point of contact for this study is Al Fenedick (312 886-6872) of the Environmental Review Branch.

Sincerely yours,

Robert Springer, Assistant Regional Administrator

for Planning and Management

July 23, 1990



Lt. Gen. Henry Hatch, Chief U.S. Army Corps of Engineers 200 Massachusetts Ave. N.W. Washington, D.C. 20314-1000

Dear General Hatch:



I am sorry that I missed you during your recent visit to the Upper Mississippi -- your visit coincided with the IWLA National Convention in Syracuse, New York.

As we enter the environmental decade of the 90's, we are at a crucial juncture on the management of the Upper Mississippi River. As you know, Congress has designated this as a multi-purpose resource - a nationally significant ecosystem as well as a nationally significant waterway. Now is the time that we must get all parties to sit down together up front, and set a reasonable planning schedule to fulfill the intent of Congress on the management of this great national resource.

Navigation studies now being prepared by your district propose extensive improvements to the navigation capacity of the Upper Mississippi and Illinois Rivers. These projects will have significant environmental impacts, and analyses of the impacts must occur before any of these improvements can be built. As we have seen in the past year and a half regarding improvements of Locks and Dam 26, the conservation community and the Corps can work together. We must try to avoid the confrontational history of the past as your new projects and alternatives are developed.

We fear that the Corps may be starting out in the wrong direction. Ramrodding navigational studies, without letting industry know clearly and up front that environmental factors will be considered at every step of the way, is not appropriate. There are those within your agency that seem to believe that if they are able to build up enough steam, they will be able to roll over environmental concerns. This is a mistake. Environmental concerns have never been more important with the American public, and those of us in the conservation community have never had more resources to call on with which to fight environmental battles.

The Corps has already broken the faith with the conservation community with regards to funding the Environmental Management Program. During the first three years this essential project, only one-half of the \$58 million authorized for the project has been requested and appropriated. This program was supposed to be kept "on equal fiscal footing" with navigation projects. Funds for navigation improvements at Locks and Dam 26, for major rehabilitation of existing locks and dams, and for operation and maintenance, have been fully funded or not cut to anywhere near this extent. Full implementation of this program is at the heart of Corps credibility for future projects.

I encourage you to convene a meeting of all parties, and to lay out a reasonable planning schedule for consideration of the environmental impacts of the entire range of navigations improvements that are being considered. There is no reason why we cannot work together. I encourage you to make sure that the environmental planning work is done up front, so that we do not find ourselves in a position of fighting over projects when the controversy could have been resolved years before.

Sincerely,

Paul W. Hansen

Director

Midwest Regional Office, IWLA

cc: Jim Gritman, Rick Nelson, USFWS

Lt. Gen. Jude Patin, Col. Jim Corbin, Col. Roger Baldwin,

Col. John Brown

Ten UMR Senators: IL, WI, MN, MO, IA

IWLA UMR Directors